

Slow Response

Why is diabetes so much on the back-burner when millions of adults have the illness and many more do not even know they are affected with this disease?

by Henk W. Hoogenkamp

Both literally and figuratively, diabetes and fast food have a lot in common. Of course, all food eventually gets digested by our bodies into simple nutrients, but likely the speed at which the nutrients – and especially the refined sugars – will be released and absorbed also matters. The latter seemingly is essential to insulin metabolism. Over the course of the 20th century, food manufacturers have increasingly refined food. For example, ever since the Industrial Revolution, grains have been refined and have removed valuable nutrients such as fibre which in fact slows down the release of their sugars. In other words, modern diets are unquestionably part of numerous and far-reaching changes to the effect that fast food is to a considerable extent pre-digested, delivering instant availability of sugar which constantly triggers insulin response and can cause type 2 diabetes.

Junk-food choices should

be eliminated from schools and probably be subject to restrictive distribution. Typical ‘junk-foods’ are low-nutrition products that include soft drinks, cookies, candy, potato chips and other ‘engineered’ high fat, high calorie foods. Certainly in the US momentum is building to a national effort to curb childhood obesity. Can the tide be turned? Or is corrective action too little and too late for the current generation and as a result only prescription drugs remain to manage this unrelenting disease?

Irreversible Disease

Diabetes is a rather strange phenomenon: it is probably one of the easier to diagnose but one of the hardest to manage. Diabetes type 2 is considered an auto immune disease that is irreversible and has no cure. As the disease spreads throughout the body, one by one, vital functions are affected. Heart infections, skin infections, blindness, non-

traumatic amputations and end-stage kidney treatment are some, but not all, of the common maladies of this fast growing medical condition.

In its most common and elementary form, diabetes allows excess sugar to build up in the blood and ultimately create irreversible damage throughout the body. Diabetes is a condition in which the body has trouble converting food into energy. The digested food is broken down into glucose which is the body’s main source of fuel. The hormone insulin assists glucose to enter the cells. However, for a diabetic, the pancreas is unable to produce sufficient insulin which ultimately results in cell starvation which then increases build up of glucose in the blood. For diabetes type 1, the immune system destroys the cells in the pancreas that produce insulin. In the case of type 2, the body’s cells are not sufficiently receptive to insulin, or the pancreas produces too little, or both.

An overwhelming number of diabetes sufferers, estimated at 95 percent of all cases, are classified as type 2. The rise of new cases is so fast that the problem can be described as a bona fide epidemic. Worse is that many who are affected go unnoticed and do not suffer any serious symptoms for up to 10 years. When finally diagnosed, doctors can do little more than to ease the complications. The disease usually means a slow way forward to

a premature death.

Preventative Measures

Although diabetes type 1 and 2 are believed to be part genetic determined, it is clear that type 2 is also spurred by obesity and inactivity. Lack of exercise seems to accelerate the onset of diabetes. It is nearly impossible to convince people of the urgency to reduce body-weight. Therefore the only realistic approach is to make them exercise more. Children in puberty who are diagnosed with youth diabetes very often are in denial about their disease and continue their carefree lifestyle.

It is estimated that worldwide some 230 million people are diagnosed with diabetes type 2. This number will grow to at least 350 million by 2025. Annually some 4 million people die prematurely as a result of this disease; a true epidemic of gigantic dimensions in the making.

Probably eating less is the quick and easy answer to the complicated issue of what people should eat to enjoy a long and healthy life. If this is true, how come that nearly all attempts to make people eat less fail. At the onset of the 21st century, the worldwide number that are overweight and obese tops 1 billion. This is a staggering 16% of the world population, and a figure almost beyond comprehension knowing that some 3 billion people, or slightly less than half the world’s population,



have a lack of nutrients. To put it differently, currently 7 out of 10 adult Americans are overweight (BMI 25>) and 3 out of 10 are obese (BMI 30>).

Weighty Problem

Being overweight and obese increases the risk of developing diabetes and many other degenerative diseases such as cancer and heart conditions. If the rate of obesity continues one can say, with a little exaggeration, that some 30 years from now 100 percent of the US population will be overweight. And if that is not bad enough, one-third or about 25 million children in the US are overweight, all with an increased risk of developing diabetes together with a host of other related socioeconomic conditions and thus enormous effects on workforce and health costs.

Baby boomers –some 79 million in the US alone – born from 1946 to 1964 are entering their years of greatest wealth and maximum government benefits, yet also are the ones to lose most. As tens of millions of people head into their golden years of prosperity, many will fall victim to the degenerative disease called diabetes type 2.

If that is not bad enough, the generations X and Y born after 1964 are confronted with the notable difference that this disease is generally diagnosed at a much younger age. For some parts of society this will mean that parents start to outlive their children. The speed at which diabetes type 2 is progressing will no doubt disrupt social welfare, healthcare, economics and family interactions.

Nutritionism Ideology

Obviously, the rest of the world should not try to imitate the American culture and life-

style when it comes to eating food. Actually, come to think of it, the perverse result of American food culture is that nutritionism seems to make people eat right while getting fatter.

Nutritionism is not a science but rather an ideology. As the case with other ideologies, the assumptions are often based on unexamined assumptions. There are so many paradoxes in various diets, lifestyles and cultures in which, proclaimed as well as perceived, unhealthy foods still make people live longer.

Looking back it can be concluded that in the 1980s food known as whole food and the basic meat and dairy products,

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began disappearing from the US food stores.

Gradually whole food groups providing nourishment were replaced by food options that were manipulated to offer convenience, nutritionally dense and above all triggered over-eating because of good taste sensations and cheap pricing. At the same time, ongoing food and medical research gave food manufacturers ammunition to create new foods which excelled in leaving out nutrients such as sugar or fat instead of adding emerging nutraceuticals. The promise of scientific certainty such as no-cholesterol made millions of people eat more and without guilt of these self-acclaimed 'healthy' foods. In the meantime their bodyweight increased to unprecedented levels, which in its turn created new opportunities for food marketing such as weight-loss foods.

Belt-Bulging

It is a strange twist of paranoia that America really got belt-bulging while indulging on low fat foods. Removing fat and replacing it with carbohydrates not only translated into often massive weight gain, but perhaps even more important, the precursor of the current explosion of new cases of diabetes type 2. Are modern dietary guidelines perhaps to blame? 'Eat more low-fat', while in reality people increased meat consumption and sugary foods to unprecedented levels! Only now scientists have come to realise that it is wrong to take the nutrient out of the context of food and the food out of the context of diet

and lifestyle.

There obviously is a paradox and without going into a long detailed explanation about what caused the major shift from whole foods to 'manipulated' foods, a number of critical socio-economical and demographical issues can be mentioned as key points of the rapidly emerging diabetes disease:

- Availability of convenience foods.
- Abundance of food during a 7/24 economy.
- Time crunch of people and families.
- TV advertising to children.
- Food promotions.
- Budget cuts in physical education.
- Home entertainment, television and computers.
- Portion distortion & super-sizing.
- Motorised transportation.
- Energy-saving devices.
- Genetic factors.



Source: Innova Database

Nom Mix Diät Diabetiker Joghurt Heidelberg – Blueberry Flavoured Yoghurt for Diabetics (Austria).

- Children grow up with less supervision from parents i.e. working mothers.
- Lack of food education.
- Cosmopolitan lifestyle removed from agriculture.

Food Marketing Flaws

Unlike in the past, food manufacturers waste no time to market special foods for the rapidly emerging single biggest disease: diabetes. Compared to heart disease, cancer and Aids, diabetes has gone largely unnoticed outside public health circles. How come that diabetes is so much on the backburner while millions of adults have the illness and many more do not even know they are affected with this disease? It doesn't stop here; the Center for Disease Control and Prevention estimates that one in three children born in the US is expected to become diabetic, not to mention Latinos: one in every two.

As the most self-indulgent generation in US history, diabetes quickly becomes a paradigm that transcends all societies from very young children to seniors. Once upon a time diabetes type 2 was only associated with fragile and ageing people. Adult-onset diabetes not only hit the baby boomers beginning to turn 60 hard,

but also began creeping into children, something totally unheard of some 20 years ago. There is a strong possibility that the rapid growing numbers of child diabetes will make the medical health profession decide to proclaim a new category type 3 or 'youth diabetes'. It is estimated that in 2007 about 3 percent of children in the US will be diagnosed with this type of diabetes.

Increased Risk

For starters, diabetics are far more likely to develop heart disease, stroke and die of complications from influenza, not to mention suffering nervous-system damage and poor blood circulation which often results in amputation of toes and even entire legs. To make matters more complicated, diabetes type 2 sufferers often show parallel problems such as high cholesterol and high blood pressure. What is particularly frightening about diabetes is that two-thirds of all patients first go through a long slow decline of health with many side effects such as amputations and then ultimately die of heart related problems.

It has already been mentioned that people with type 2 diabetes are at risk of heart attacks, facing a 20.2 percent chance of such an attack over seven years. One of the com-

elling reasons for controlling blood sugar in diabetic patients is to manage that risk. Designer drugs such as Avandia by GlaxoSmithKline – their second-largest selling drug with more than US\$3 billion in sales worldwide – seemingly are not always the answer now that new evidence is emerging that this prescription drug is contradicted and appears to do more cardiovascular harm than good. Of course, managing a terrible disease like this is very important, though prevention is key by attaining to a healthy lifestyle, including sustainable food choices and physical activities.

Sociological Story

There is little doubt that diabetes type 2 can have catastrophic consequences for both patients and the sheer number of diagnosed and undiagnosed patients will ultimately ransack healthcare and hospital capacity. It has already been mentioned that genetics play only a minimal part. The velocity of new cases continues to accelerate and a plausible explanation is that diabetes is as much a sociological and anthropological story as a medical one. Subsequently, everything being even, the real culprit seems to be faulty diet and inactivity. Lifestyle changes over the last 20 years

or so have given society fundamental shifts that has people eating oversized meals at a 7/24 pace coupled with significantly less physical activity.

Double Whammy

Diabetes type 2 threatens all demographic areas of society. Millions of affected people will not be able to function in society without sufficient significant aid. A double whammy for health care management in western societies who is expected to slash costs, not to mention the massive economic trauma coupled on a decline in life expectancy due to these chronic conditions. For example, in the US with a population of 300 million people, the number of diabetes type 2 patients has in 2007 doubled to an estimated 21 million, or about 7 percent of the population, in just two decades. Yet politically speaking, the urge to do something about it seems to be less than the more 'fashionable' diseases such as Aids and cancer. The US federal government is spending \$ 1.2 billion to study diabetes, less than a quarter of what is spent to study cancer. Or in other words, US Government funds spends 10 times more per patient on cancer research, and the death rate for that disease, unlike for diabetes, has begun to fall.

In the EU25, an estimated 19 million people are affected by diabetes type 2 or 4 percent of the population. By 2030 the diagnosed diabetes patients will rise to 26 million. Compared to US Government spending on diabetes research, EU25 research support is significantly less.

Perhaps the perception that diabetes type 2 is a slow-moving condition for the old and obese makes it of less urgency. These misperceptions need to be addressed quickly, especially now that rapidly increasing numbers of young children and teens are affected by this treacherous disease that can be compared to a massive tidal wave hitting society.

Link to Food

The truth often is hard to accept, but it is a fair assessment that overweight and obesity begins at home. Children at all age groups and even babies are gaining too much weight, and sociological, behavioural, as well as demographic studies have indicating that the lion's share of the responsibility is with the parents, many of whom are setting bad examples of being too heavy also.

In a way, children are indoctrinated at home and simply learn the bad eating habits from their parents. So the first lesson is not to teach children, but parents what to stock in the pantry. Parents are supposed to be role models for children, but is it strange that children do not eat more fruit and vegetables if the parents 'reward' children with sweets, candy and savoury snacks?

Can mothers be blamed for insufficient help and advice about proper diets if in fact they are supposed to have a professional career while being a housekeeper, mother, lover and wife all at the same time? Increasing numbers of families

Changing Vending Contents

The Institute of Medicine has issued a report offering recommendations what US schools should offer in vending machines and school cafeterias:

- Tier 1 food – Available to all school children and teens. Fruit, vegetable, whole grain, non-fat or 1%-fat milk. Foods should contain no more than 35% of total calories from fat, no trans fat and no more than 35% of calories from total sugars. Snacks should contain no more than 200 calories per packaged portion (=serving size). Examples: dried fruit, raisins, apples, carrots, whole-grain, low-sugar cereals, some granola bars. Water, skim milk, 100% fruit or vegetable juice with maximum of 100g/servings.
- Tier 2 foods – Only available to secondary education students 12 years and older. Similar foods as Tier 1, but no restriction on portion/serving size. Examples: single serving of potato chips, low-sodium wheat crackers, caffeine-free diet cola, sport drinks (electrolyte drinks) should be only available during school sports and exercising using vigorous activity.

simply have no clue how to prepare healthful meals. In fact, the parents of today often were raised on junk-food while their busy lifestyles frequently translates into encouraging meal planning at spur-of-the-moment decisions based on convenience and taste sensations, rather than basic and wholesome food choices.

Staple produce such as fresh vegetables and fruit should never be of less importance than ice cream, sweets, cookies and sodas. The latter often is the first point where healthy diets go wrong. Carbonated sugary drinks often represent 500 calories or more a day and replacing these with plain water makes a major difference. Convenience foods also share much of the blame because these 'instant and/or packaged foods' stimulate grazing or compulsive eating and take away the basics of-

fered by a regular structured meal. High-fat, high carbohydrate, coupled on low-nutrient foods should be off-limit for children throughout the schooling years.

Individual Nutrients

In terms of the fast rise in diabetes type 2, perhaps a closer look at the quality of individual nutrients is important. Specifically the speed at which sugars will be released and absorbed is gaining important status as critical insulin metabolism. In particular the question is valid if a relationship exists between diabetes type 2 and corn extracted sugars that might lead to ill health because the insulin system of our bodies cannot cope with the very frequent and sudden surges caused by foods and beverages that contain large amounts of high fructose corn syrup.

Perhaps in an ecological

sense the Western diet has changed in a too rapid and radical manner in which the body has not evolved at the same speed.

At the heart of this matter are large scale changes that can be grouped as follows:

- A shift from whole foods to refined foods: Refining to improve flavour and taste and shelf life at the expense of lost nutrients such as fibre that ordinarily slows the release of their sugars. Instant gratification and surge of sugars (such as in energy drinks) ultimately can overwhelm the insulin response that causes diabetes type 2.
- A shift from complexity to simplicity: Use of chemical and synthetic fertilisers can affect the chemistry of the soil which, according to an increasing number of scientists, depletes the soil and subsequently the nutrient con-

Wellness from Dalco Food in The Netherlands is promoted as 'the smartest piece of meat'. The product is rich in omega 3 fatty acids.



tents of its harvest. Coupled on intensified farming, the number of species and crops has declined to a small group of plants such as soybeans, corn, wheat and potatoes.

- From food culture to science: The industrialisation of the world is centred on popularising the so-called Western



Sub Zero Dairy Vanilla Ice Cream Suitable For Diabetics (UK).

diet. This is not an evolution but rather a revolution and as such systematically destroying traditional food cultures. In this sense the traditional role of the mother is by-passed with as a result grave consequences for relationships between culture, nature, tradition and undermining her authority of traditional ways of cooking and the enjoyment of food at a slow pace at set times.

Corrective Actions

The Western food industry has come into the firing-line now that they continue to aggressively market high-fat, high-sugar 'foods' to children, and providing special incentives to schools to put dispensing machines for soda pop exposing children and students to an abundance of 'empty carbohydrates' and many other selections of fattening foods. In the US alone, there are 50 million school-aged children and it is absolutely necessary to implement tougher standards. About one-third of children and teens in the US are overweight or obese. On any average school day children get 30 to 50 percent of their calories there. Needless to say that the school diet has a huge impact on their diets and psychological attitude about food later in life. Even for parents who mean well and provide for healthy lunch-boxes often find their effort undermined when children pitch their lunch-box and purchase junk-food instead.

Change in Tide

There are signs that the tide is changing. Consumers' negative perceptions towards the full-calorie classic carbonated soft drinks such as soda and 'pop' is on the increase and for the first time sales

are decreasing for both sugar-loaded versions as well as for diet beverages. The latter can be explained that the use of artificial sweeteners seems to make increasing number of consumers nervous. Consumers wary of artificial sweeteners seek viable alternatives to refined sugar and especially high-fructose corn syrup. Probably this is the main reason why companies now prefer to use a new terminology: 'sparkling beverages'. After all, sparkling beverage sounds much better than sugar-beverage and/or artificially sweetened drink.

Although still relatively small in percentage, it is true that an increasing number of pro-active health consumers and teenagers are shying away from the classic carbonated sodas and now prefer beverages such as Vitaminwater (now part of the Coca Cola family of brands) and a host of other non-carbohydrate beverages. This shift in behaviour can perhaps best be observed at McDonald's who now also offer branded bottled water and noncarbonated fun drinks.

Besides the need for parents and schools to adapt a pro-active healthy diet program, there is growing consensus that the real culprit behind childhood obesity is inactivity. New gadgets and computers are simply too tempting for children to grow into a sedentary lifestyle.

Latest Shifts

Fortunately some changes

are now being implemented. In the US, under the growing threat of lawsuits and State legislation, Coca Cola, Cadbury Schweppes and Pepsi have started to remove their vending machines from schools. These are replaced by healthy choices such as bottled water, low-fat and non-fat milk and 100 percent fruit juice in servings no bigger than 200ml. Only at high schools would sports drinks and sodas be allowed to be dispensed and these products with a serving size limited to 300ml.

It is expected that for the development of medicated foods and beverages a second generation of polyols such as erythritol and xylitol will be considered and possibly also the natural alternatives agave nectar and stevia. Future development will therefore focus on sweeteners that can pass through the human gut without involving insulin. Functional foods and noncarbonated beverages will edge close to self-managed healthcare. For diabetes type 2 patients, real health enhancing easy-to-use solutions will be formulated ensuring stable blood glucose levels. These special foods and beverages need to deliver smaller peaks of blood glucose, fewer carbohydrates and more quality protein. These features preferentially need to be coupled with special fat blends that include omega 3, monounsaturated and polyunsaturated fats to assist reducing cardiovascular risks.

Changing Paradigm

For food and beverage companies the paradigm will change. Weight and diabetes are closely tied together, and a better understanding of emerging research on diabetes ultimately will translate in special food categories. It is expected that food formula-

tors increasingly will include ingredients to reduce glycaemic impact, while adding fibre, fibre starch fractions and bioactive nutraceuticals. Especially food selections and/or ingredients that reduces blood sugar rises after a meal might have implications for diabetes management. For example cactus pear, locally known as nopales in Mexico are used in burritos and quesadillas and have shown potential to achieve these objectives.

Also protein choices and protein quality will receive more focus, such as high quality non-GM soy protein isolate, whey protein concentrate, rice protein, potato protein and egg albumen.

There is a trend to deliver blends of dietary protein to further optimise quality, though these nutritional advantages can be offset by the growing need to eliminate certain protein-specific allergen. The latter might be beneficial for rice protein and potato protein choices.

Instead of selling oversized calorie-laden fast foods or packing over-portioned convenience foods, the emphasis needs to shift to miniaturisation of premium selections. After all, people tend to eat until the serving size or portion is finished. Especially for diabetes less is more! That is to say, with the exception of physical activity of course. As the special food and beverage category for diabetes type 2 patients grows, products finally will be moved into mainstream distribution with the added benefit that the stigma of managing a disease like diabetes is likely to be eliminated. ♦

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