“Diabetes: A National & Global Perspective”

Paul Zimmet AO
Director Emeritus
Baker IDI Heart & Diabetes Institute
Melbourne
“Diabetes is a public health emergency in slow motion”

Ban Ki-Moon, UN Secretary-General
Obesity is driving the escalating Diabetes epidemic: The biggest epidemic in human history
2006 UN General Assembly Resolution on Diabetes
Modernization & High Diabetes Prevalence
1966-1975

Phoenix Arizona: Pima Indians

Pacific – Nauru

Australia: Indigenous

New Zealand: Maori
Global Projections for the Diabetes Epidemic: 2010-2030 (millions)

World
2010 = 285 million
2030 = 438 million
Increase 54%

2011 - a staggering 366 million
2030 – 552 million

The 10 Top Nations for Diabetes Prevalence: 2010

-Malaysia
-Tonga
-Oman
-Kuwait
-Réunion
-Bahrain
-Mauritius
-Saudi Arabia
-UAE
-Nauru

* For 20-79 year population
A Western killer let loose in paradise

PARADISE — also known as the South Pacific — has palm trees, white beaches, smiling black islanders, peace, pleasure, and no tomorrow. But there will be a tomorrow, and it's skiing bad in Paradise. In the past 10 years, many of those smiling people have at their feet, gone blind, become obese, got heart disease and many kinds of cancers, and have died prematurely.

Diabetes, possibly the greatest hidden killer in the world, has hit the South Pacific. Professor Paul Zimmet, director of the Diabetes Institute in

A Melbourne doctor, known as the "Captain Cook of diabetes" travels the Pacific treating and teaching islanders about one of their most common illnesses.

ANNA KING MURDOCH reports.

started to get high rates of diabetes, and that agenda until the coup, when a lot of doctors left the country."

Ten years ago, the Lions International Diabetes Institute became the first World Health Organisation Collaborating Centre for Diabetes. "We're still the only one in the Southern Hemisphere, but there are about 20 now in the Northern Hemisphere."

The institute, which is Paul Zimmet's major achievement, nearly closed down its research activities at the end of last year because of lack of funds. For 12 years it had received money from the National Institute of Health in Washington, but last year the supply stopped as American research funds

Professor Paul Zimmet: "... heading for a global epidemic of diabetes."
Diabetes Numbers: 10 Highest Countries 2010 *

China now has over 90 million people with diabetes*

# Diabetes Atlas, 3rd edition, IDF 2006
* Yang W et al NEJM April 2010
Mauritius: The Next Step in Predicting the Global Diabesity Epidemic

- The population consists of Asian Indians, Blacks (Creoles) and Chinese
- These 3 ethnic groups constitute 66% of the world’s population
Mauritius: Increase in Diabetes Prevalence over 22 yrs

62% increase from 1987 to 2009

Prevalence of Diabetes %

Standardised to 2008 population structure of Mauritius
Increasing Diabetes Prevalence 1980-2009: China

Life style changes

Ji Linong: Personal communication
Coca-colonization in Jaipur, India
Prevalence of Diabetes in Urban India (Chennai)

Prevalence 2000 – 13.9%
Prevalence 2006 – 18.6%

Ramachandran et al. *Diabetes Care* 2008
India increasingly crippled by ‘the sugar disease’

Obesity and inactivity lead to diabetes

By N.R. Kleinfield

MADRAS, India: There are many ways to understand diabetes in this chocking city of automakers and software companies, where the disease seems as commonplace as kari.

One way is through the story of P. Gunam, a proper woman reduced to fake gold.

Her husband, K. Palayam, had diabetes do its corrosive job on him: Ulcers bore into both feet and cost him a leg. To pay for his care in a country where health insurance is rare, Gunam sold all her cherished jewelry. Gold, as she saw it, swapped for life.

She was told about the necklaces and bracelets she was now wearing—worthless imposts, as it turned out.

"Diabetes," she said, "has the gold.

And now, Gunam, the scaffolding of her hard-won middle-class existence already undone, has diabetes too.

It is hardly an outlier. India is a country not just of diabetes, but of the type 2 diabetes is engulfing India, swallowing up the legs and jewels of those comfortable enough to put on weight in a country better known for famine. Here, juxtaposed alongside the slick-highway povery, the malarias and the AIDS, the number of diabetics now totals around 33 million, and counting.

The future looks even more ominous as India hurries into the present, modernizing and urbanizing. Even more of its 1.2 billion people seem destined to become heavier and more vulnerable to Type 2 diabetes, a disease of high blood sugar brought on by obesity, inactivity and genes, often culminating in blindness, amputations and heart failure.

In 20 years, projections are that there may be a staggering 75 million Indian diabetics.

"Diabetes, unfortunately, is the price you pay for progress," said Dr. A. Ramachandran, managing director of the M.V. Hospital for Diabetes in Madras.

For decades, Type 2 diabetes has been the "rich man’s burden," a problem for industrialized countries. But as the sugar disease, as it is often called, has penetrated the United States and other developed nations, it has also trickled deep into the far more populous developing world.

In Italy or Germany or Japan, diabetes is on the rise. In Bahrain and Cambodia and Mexico — where industrialization and Western food habits have taken hold — it is rising even faster. For the world has now reached the point, according to the United Nations, where more people are overweight than undernourished.

Diabetes does not convey the ghastly despair of AIDS or other killers. But more people worldwide now die from chronic diseases like diabetes than from communicable diseases. And the World Health Organization expects that of the more than 350 million diabetics projected in 2025, three-fourths will inhabit the third world.

"I am concerned for virtually every country where there’s modernization going on, because of the diabetes that follows," said Dr. Paul Zimmet, the director of the International Diabetes Institute in Melbourne, Australia. "I am fearful of the resources ever being available to address it."

India and China are already home to more diabetics than any other country. Prevalence among adults in India is estimated at about 6 percent — two-thirds of that in the United States — but the illness is traveling faster, particularly in the country’s large cities.

Throughout the world, Type 2 diabetes, once predominantly a disease of the old, has been striking younger people earlier.

But because Indians have such a pronounced genetic vulnerability to the disease, they tend to contract it 10 years earlier than people in developed countries. It is because India is so youthful — half the population is under 25 — that the future of diabetes here is so chilling.

The conventional way to see India is to inspect the want — for food, for money, for life. The 300 million who struggle below the poverty line. The millions of children too little to eat.

But there is another way to see it through its newfound excesses and expanding middle and upper classes. In a changing India, it seems to go this way: Make good money and get cars, get houses, get use out of it, get diabetes.

Obesity and diabetes stand almost as joint totems of success. Last year, for instance, the BMW fast-food and ice cream restaurant in Madras proclaimed a promotion: "Overweight? Congratulations."

The limited-time deal afforded diners savings equal to 20 percent of their weight in kilograms. The heaviest arrival, plugged in at 111 kilograms, or 244 pounds, ate lastly at 67 percent off.

Too much food has pernicious implications for a people with a genetic susceptibility to diabetes, possibly one of ancestral prowess developed to hoard fat during cycles of feast and famine. This vulnerability was first noted decades ago when immigrant Indians who were settled in Western countries got diabetes at levels dwarfing those in India.

Now westernization has come to India and is bringing the disease home. Though 70 percent of the population remains rural, Indians are steadily forsaking paddy fields for a city lifestyle that entails less movement, more fattening foods and higher stress — a toxic brew for diabetics.

In Madras, about 15 percent of adults are thought to have the disease, one of India’s highest concentrations, more than the soaring levels in New York, and triple the rate two decades ago. Three local hospitals, generally known as the sugar hospitals, are devoted to the illness.

The pungent aromas of quick-food emporiums waft everywhere here. Sweeties are obligatory at social occasions — birthdays, office parties, mourning observances — and during any visit to someone’s home. The millions of children too little to eat.

"Jokingly in talks," said Dr. V. Mohan, chairman of the Diabetes Specialities Centre, a local hospital. "I say you haven’t made it in society until you get a touch of diabetes."

The New York Times
Number (in Millions) with Diagnosed Diabetes, United States, 1980–2009

- USD 465 billion spent on healthcare for diabetes
- 11% of all healthcare spending is for diabetes

CDC website: last modified: March 29, 2011
Australia 2020: Setting our Nation's Sights for the Future

“If current trends continue, by 2020, diabetes will be the leading cause of disease for men and the second leading cause for women.”

The Hon Kevin Rudd (Former) Prime Minister
April 2008
Diabetes In Indigenous Australians: Age-Specific Prevalence (%)
ATSI have one of the highest rates of diabetes in the world.

ATSI have the highest rate of ESRD deaths in the world.

Alice Springs has the largest dialysis unit in the Southern Hemisphere!
The Dutch Winter Famine

- At the end of WW2, West Netherlands population suffered an acute famine
- Allocated rations were 400 to 800 calories/day
- Women exposed to this during the 2nd and 3rd trimester of pregnancy delivered small babies.
- As adults, these babies (exposed to famine in utero) had a higher prevalence:
  - Type 2 diabetes
  - Cardiovascular disease (heart attacks, strokes)
  - Hypertension
  - Obesity
  - Schizophrenia

Rotterdam, 1945
Genetic-Environment Interaction for Type 2 Diabetes

ENVIRONMENT

EARLY LIFE
• Low birth weight
• Poor nutrition

ADULT LIFE
• Sedentary lifestyle
• Dietary factors

DIABETES +/-
THE METABOLIC SYNDROME

GENES

CARDIOVASCULAR DISEASE
European Diabetes Congress: Berlin 2012
Epigenetics: Foetal Programming & Intergenerational Risk
New Confounding Disorders Accelerating the Diabesity Epidemic

- Obesity
- Diabetes
- Insulin Resistance
- Dyslipidaemia

Sleep Apnoea

HIV/AIDS Therapy

Non-alcoholic Steatohepatitis (Primary NASH)

Consensus Development Conference on Antipsychotic Drugs and Obesity and Diabetes

American Diabetes Association
American Psychiatric Association
American Association of Clinical Endocrinologists
North American Association for the Study of Obesity
Conclusions

• Diabesity continues to rise exponentially globally
• Ageing, lifestyle change & urbanisation have been targeted as the main drivers but in developing nations & Indigenous communities, the story may be very different
• A greater focus on epigenetics & early life risk factors eg maternal nutrition may lead to more effective strategies to halt this global “perfect storm” of diabesity
• By 2020, diabesity is set to bankrupt the economies of many nations (and possibly the NT!) unless action is taken
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