

Tackling Diabetes in Asia: *People, politics, and prevention*



Paul Zimmet AO
Director Emeritus
Baker IDI Heart and Diabetes Institute
Melbourne



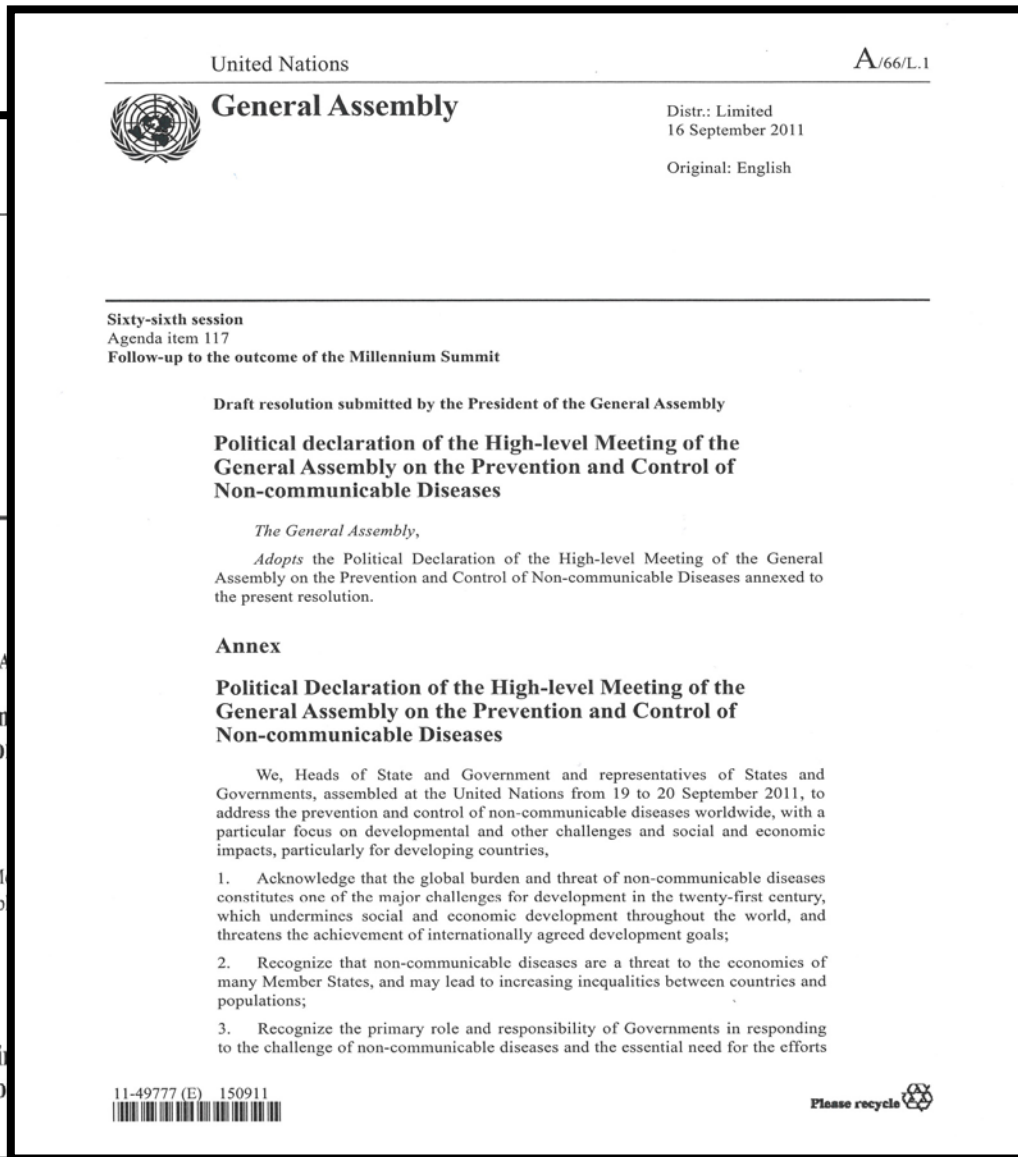
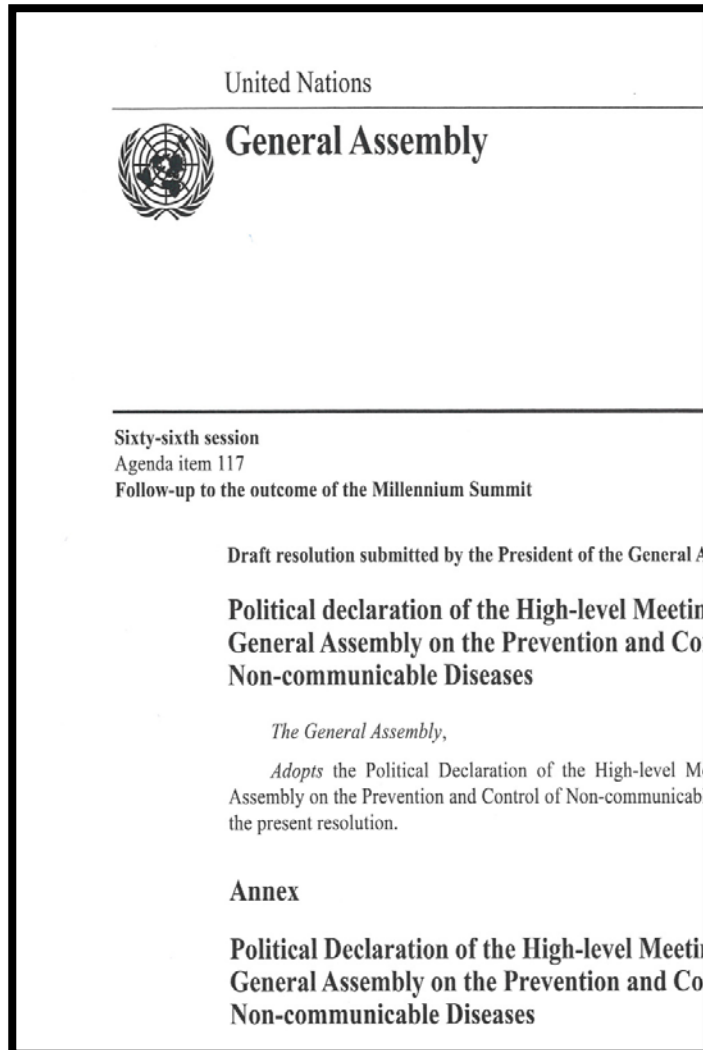
Ban Ki-Moon,
UN Secretary-General

“Diabetes is a public health emergency in slow motion”

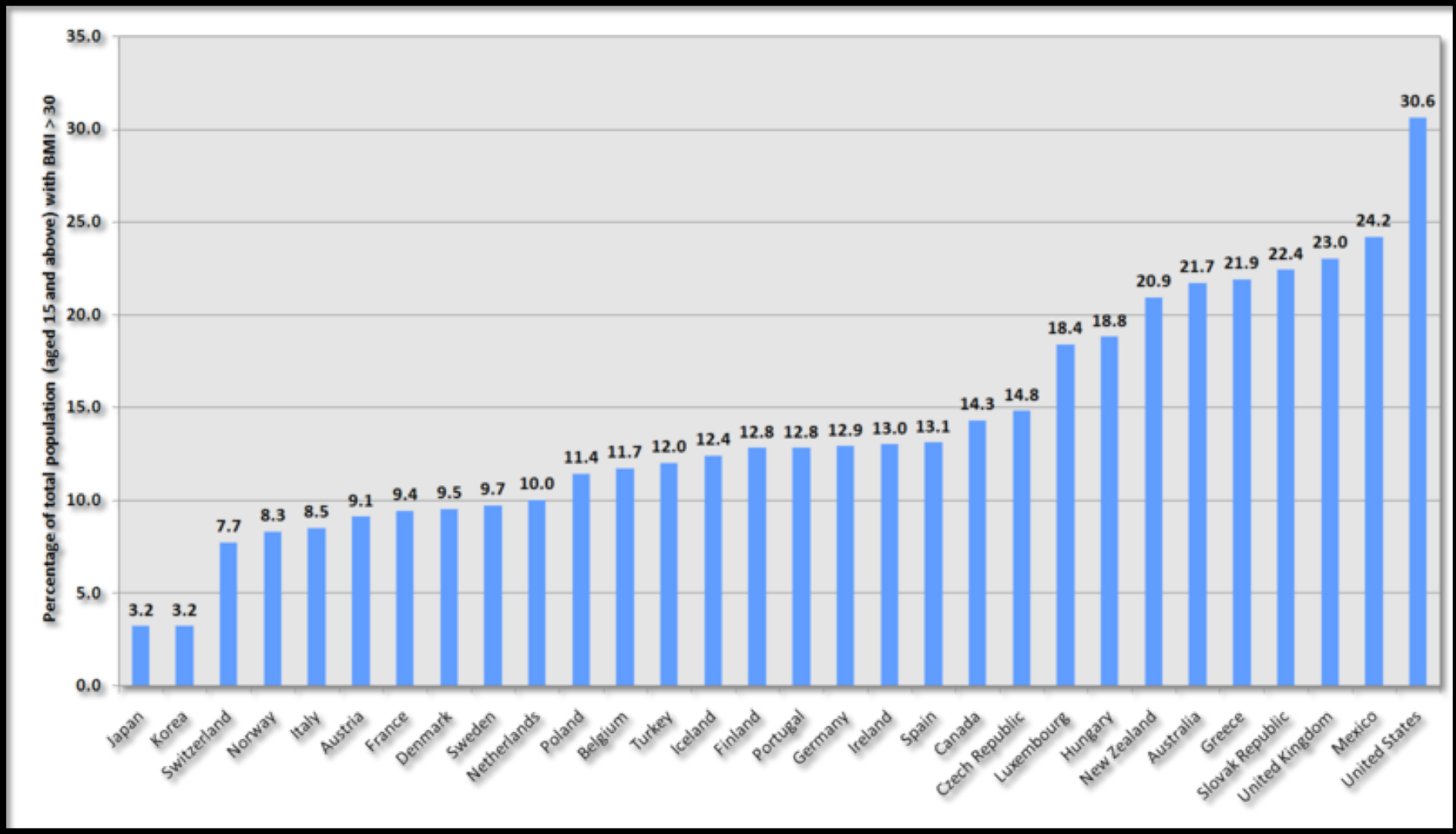
2006 UN General Assembly Resolution on Diabetes



September 2011: The Next Step – UN Resolution on NCDs



Where do nations rank in the global obesity stakes?



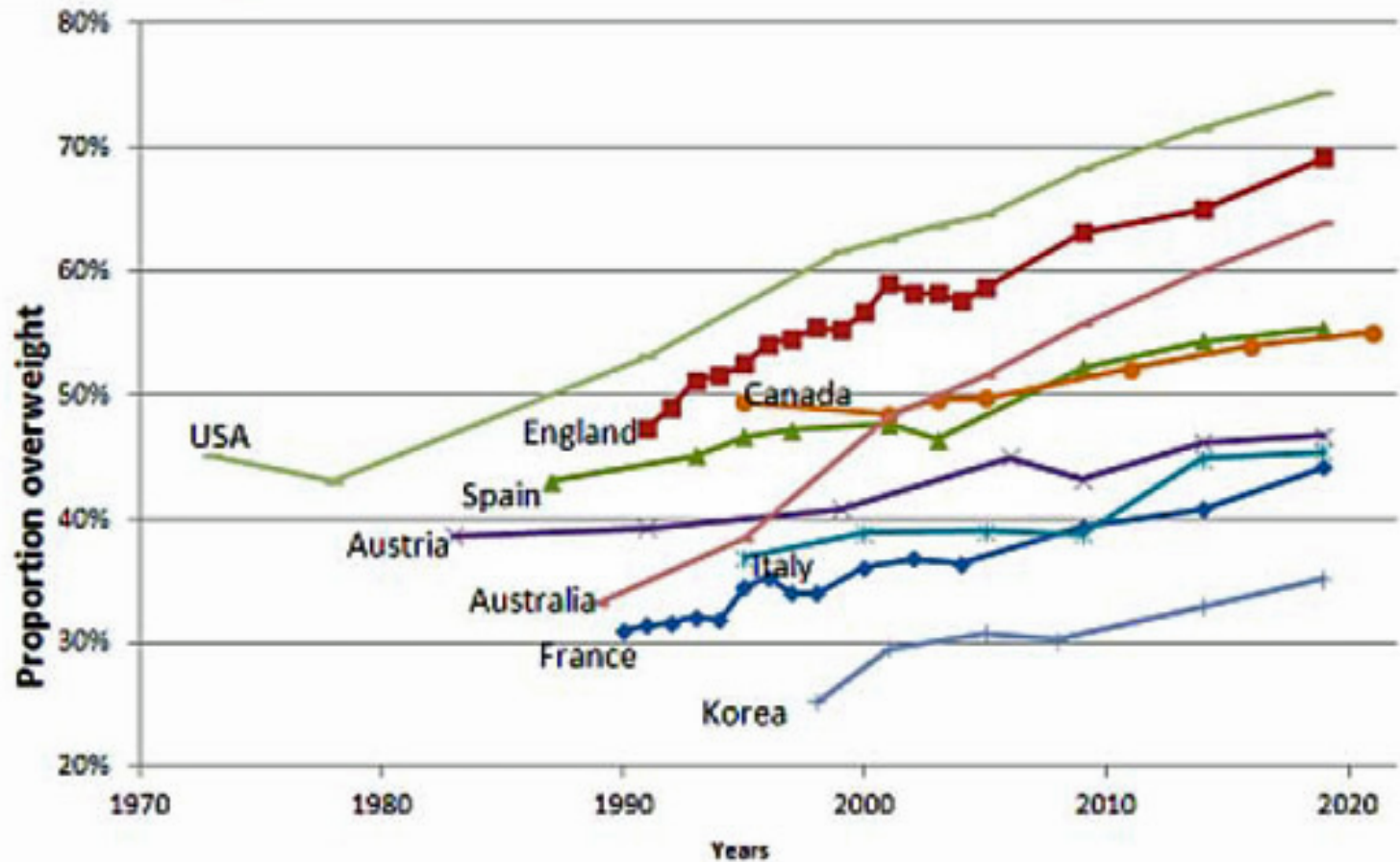
Japanese Health Minister Lead The Way in Obesity!



<http://www.mhlw.go.jp/bunya/kenkou/metabo/index.html>

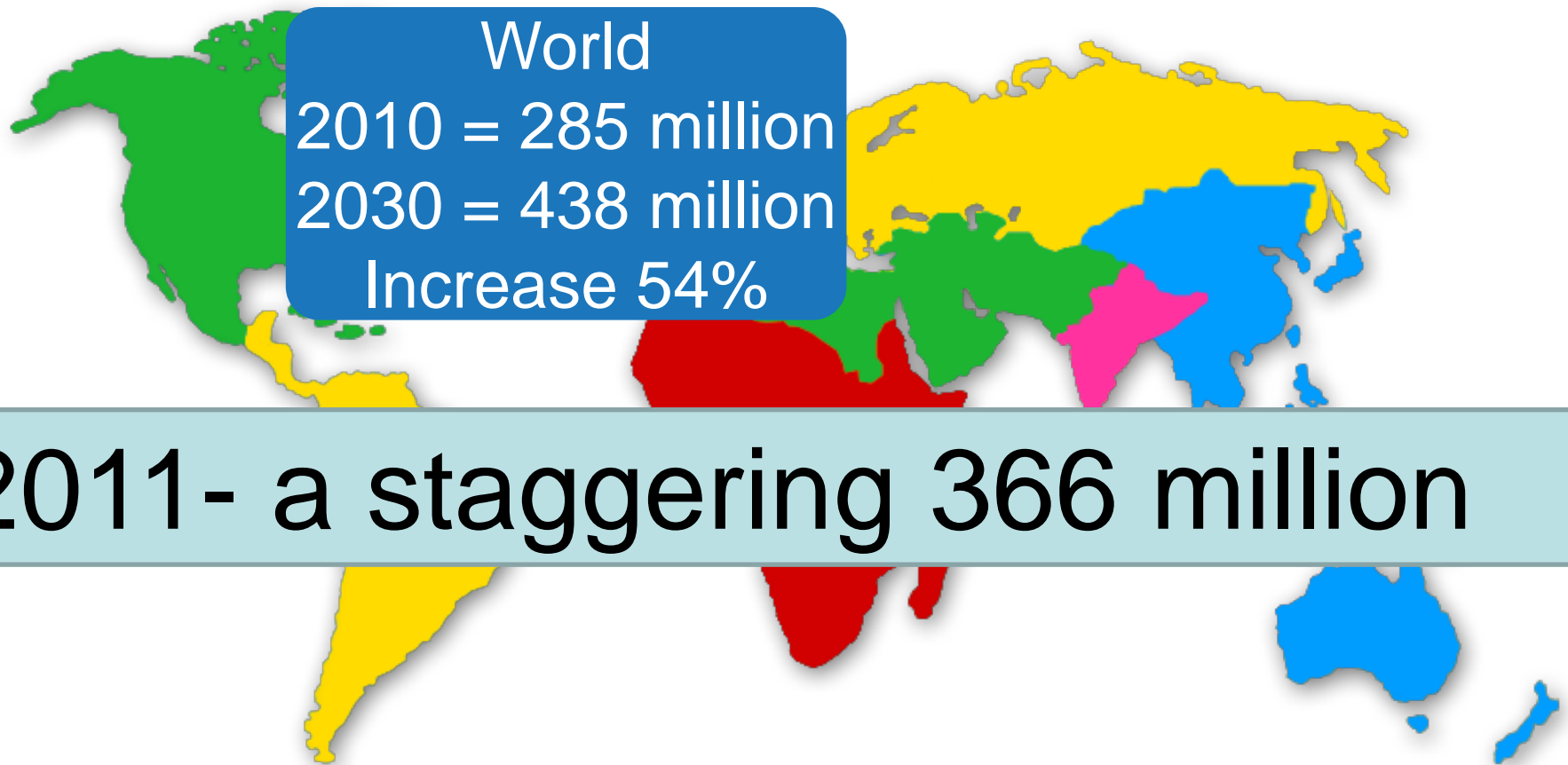
OECD Predictions for Future Overweight Rates

Past and projected future overweight rates in selected OECD countries



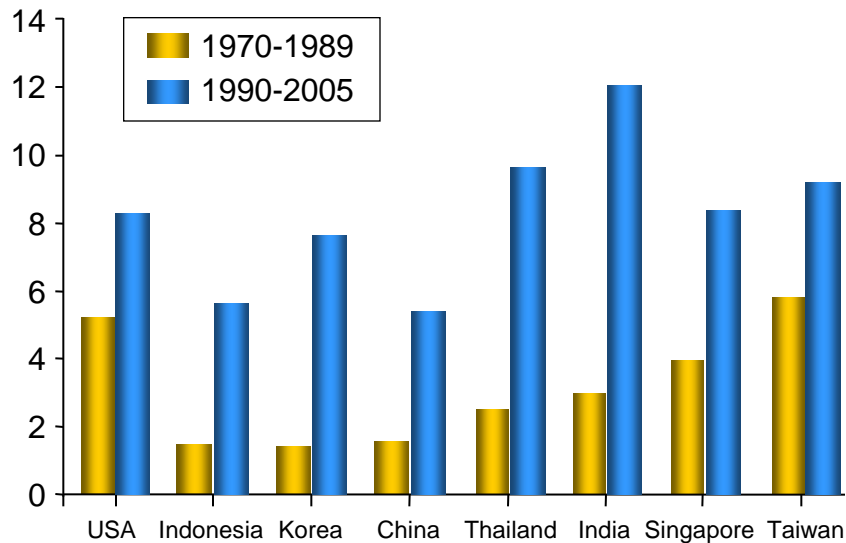
Obesity is driving the escalating Diabetes epidemic: The biggest epidemic in human history

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

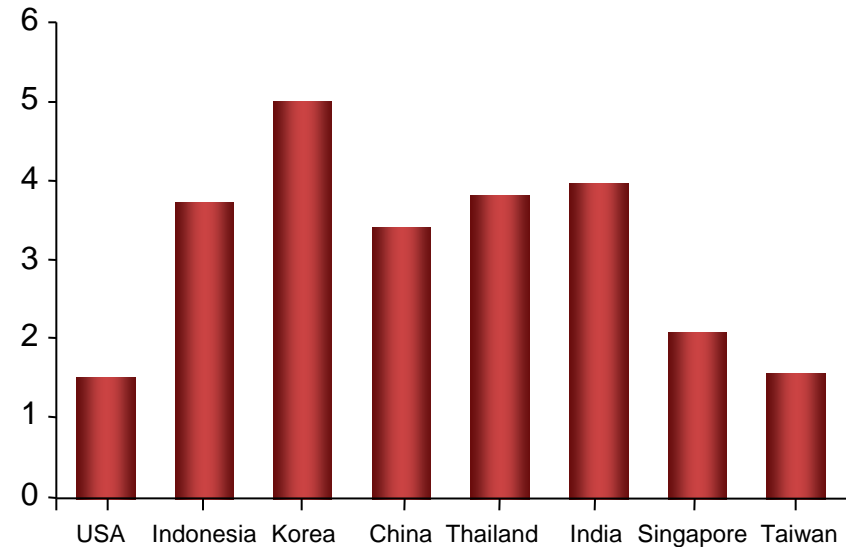


Diabetes Prevalence Rates in Selected Nations: 1970-1989 & 1990-2005

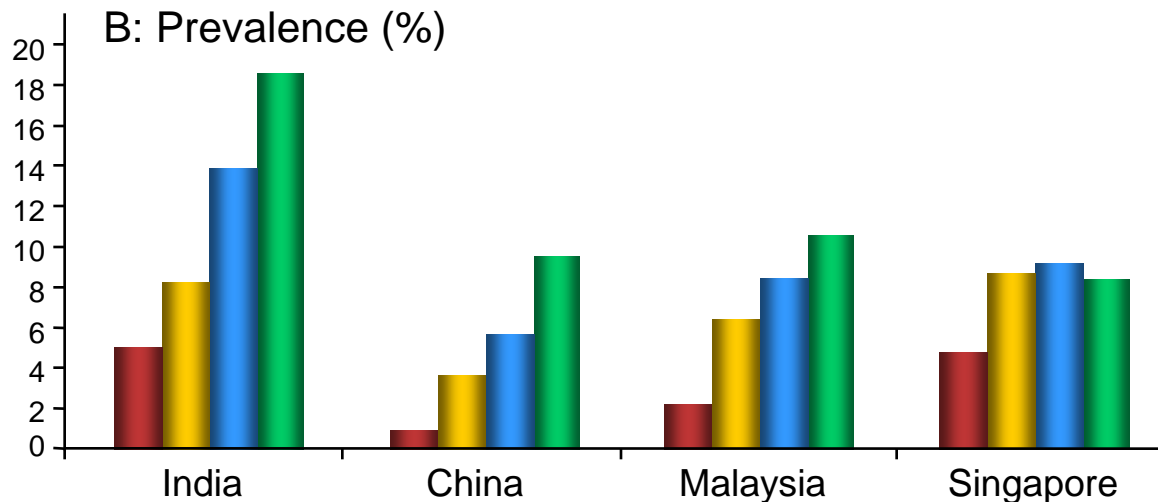
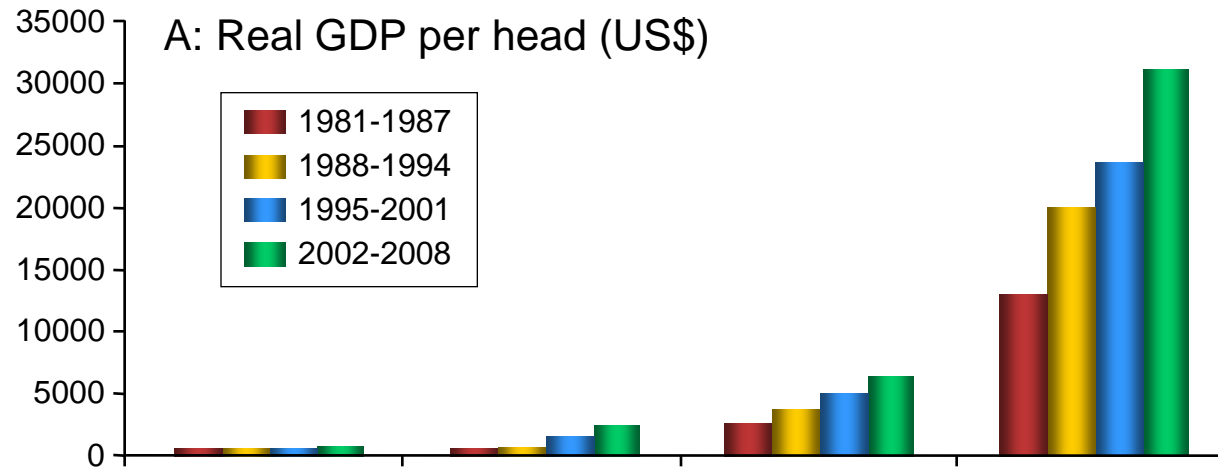
A: Prevalence of Type 2 Diabetes (%)



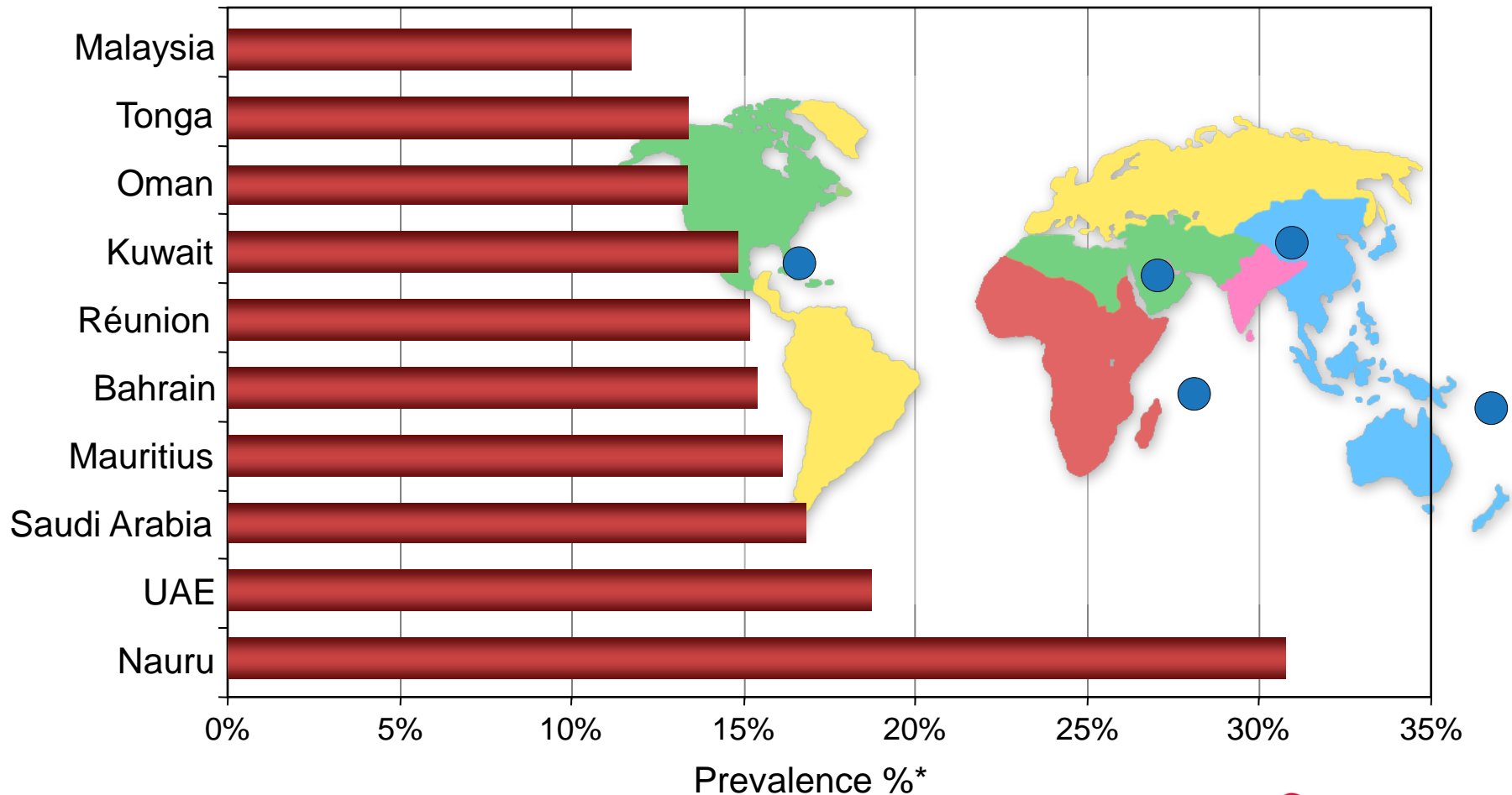
B: Multiplication factor for increased prevalence of Type 2 Diabetes



Economic Development & Prevalence of Diabetes in Selected Asian Countries: 1981-2008



The 10 Top Nations for Diabetes Prevalence: 2010



* For 20-79 year population

Western Killer in Paradise

“The Age”, May 1992

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 looking bad in Paradise. In the past 10 years, many of those smiling people have lost 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 Lions International 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



Professor Paul Zimmet: “. . . heading for a global epidemic of diabetes.”

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.”

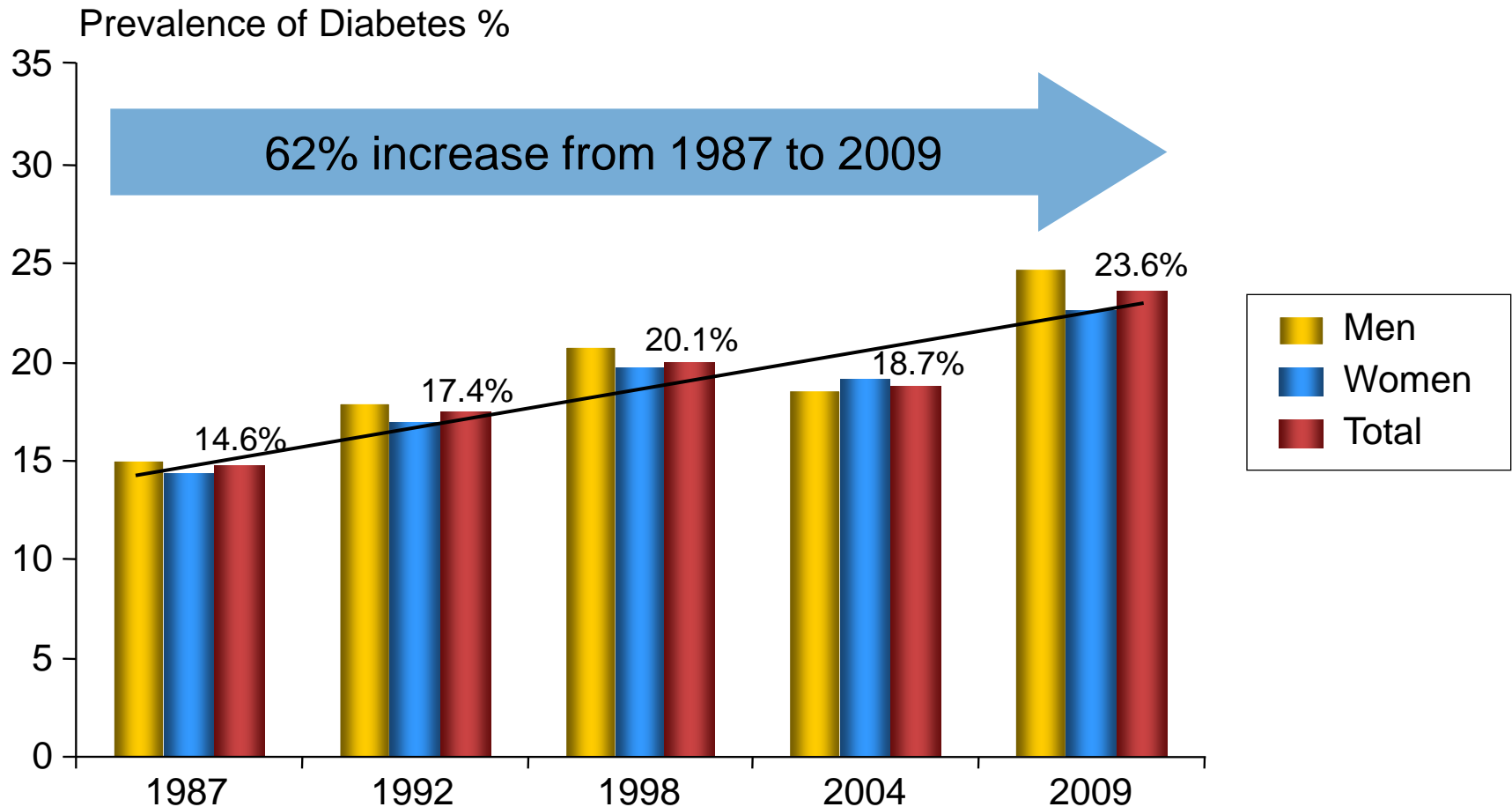
The institute, which is Paul Zimmet's major achievement, nearly closed down its research activities at the end of last year because of lack of funds. For 12 years it had received money from the National Institute of Health in Washington, but last year the supply stopped as American research funds

Mauritius: The Next Step in Predicting the Global & Asian Diabetes Epidemic

- The population consists of Asian Indians, Blacks (Creoles) and Chinese
- These 3 ethnic groups constitute 66% of the world's population
- Studies performed: 1987, 1992, 1998, 2004 and 2009

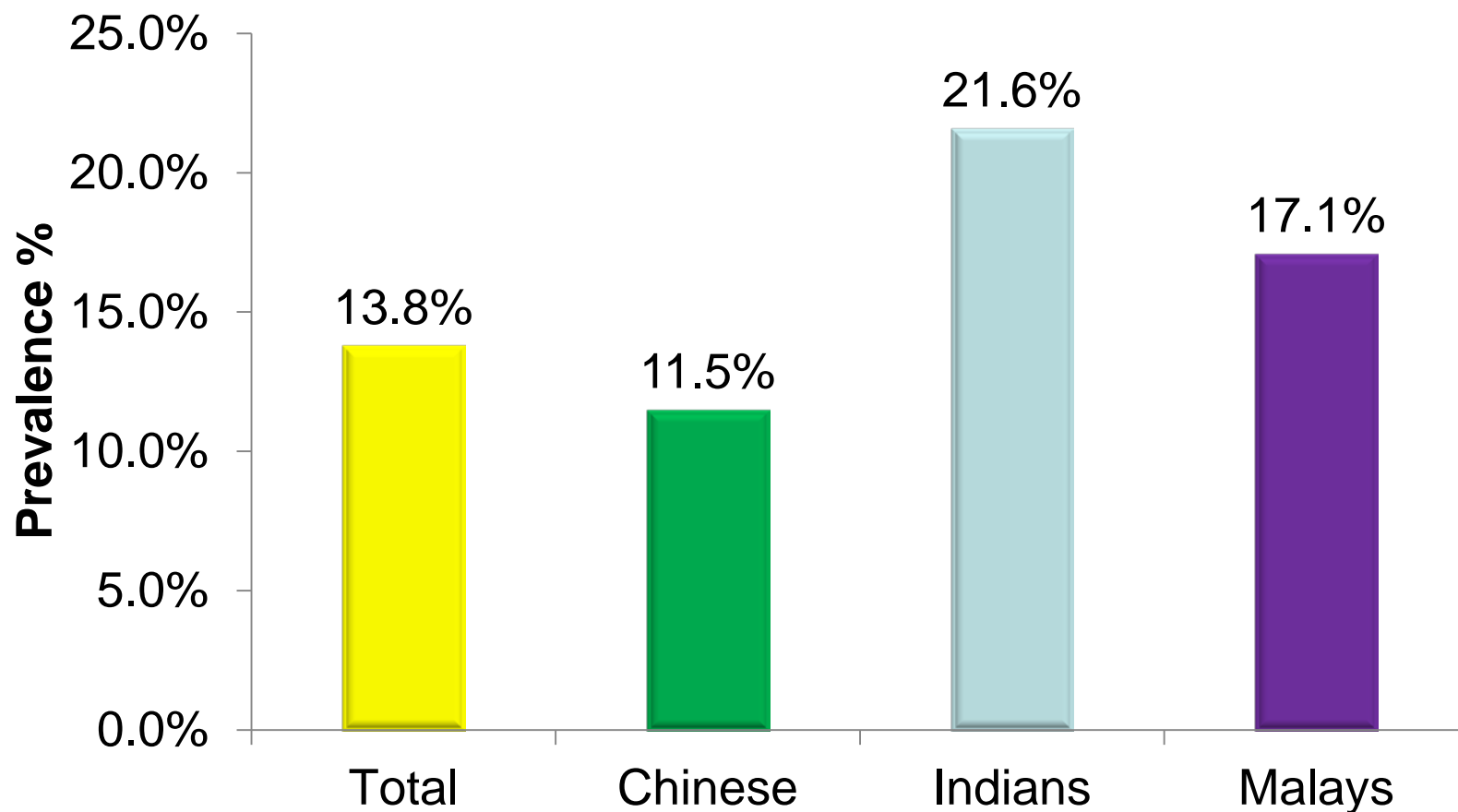


Mauritius: Increase in Diabetes Prevalence over 22 yrs



Standardised to 2008 population structure of Mauritius

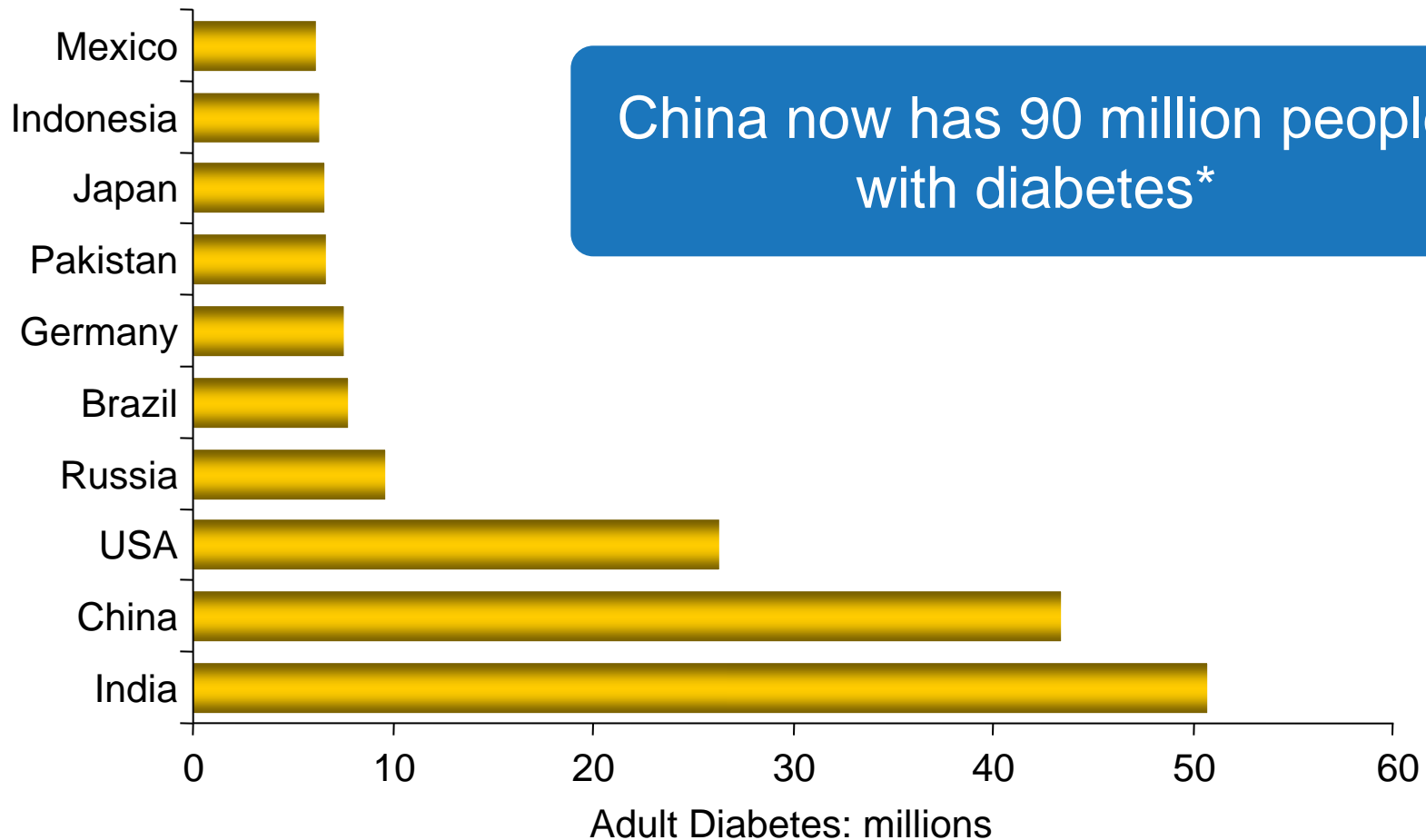
Prevalence of Diabetes*: Singapore National Study 2009**



* Based on fasting plasma glucose

** Persons 40-95 years

Diabetes Numbers: 10 Highest Countries 2010



Diabetes Atlas, 3rd edition, IDF 2006

* Yang W et al NEJM April 2010



Coca-colonization in Jaipur, India



INTERNATIONAL Herald Tribune

THE WORLD'S DAILY NEWSPAPER • PUBLISHED BY THE NEW YORK TIMES EDITED IN PARIS AND HONG KONG • PRINTED IN FRANKFURT

iht.com

THURSDAY, SEPTEMBER 14, 2006

India increasingly crippled by 'the sugar disease'

By N.R. Kleinfield

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

One way is through the story of P. Ganam, 50, 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, Ganam sold all her cherished jewelry. Gold, as she saw it, swapped for life.

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

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

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

In its hushed but unrelenting manner, 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 stick-thin poverty, the malaria and the AIDS, the number of diabetics now totals around 35 million, and counting.

The future looks only more ominous as India hurtles into the present, modernizing and urbanizing. Even more of its 1.1 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.

Obesity and inactivity lead to diabetes

"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 to solve. But as the sugar disease, as it is often called, has penetrated the United States and other developed nations, it has also trespassed 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'm 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'm 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 es-

timated 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.

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 with 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 meals out, get diabetes.

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

The limited-time deal afforded diners savings equal to 50 percent of their weight in kilograms. The heaviest arrival lugged in 135 kilograms, or 297 pounds, and ate lustily at 67.5 percent off.

Too much food has pernicious implications for a people with a genetic susceptibility to diabetes, possibly the byproduct of ancestral genes developed to hoard fat during cycles of feast and famine. This vulnerability was first

spotted 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 diabetes.

In Madras, about 16 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, quaintly known as the sugar hospitals, are devoted to the illness.

The pungent aromas of quick-food emporiums waft everywhere here. Sweets are obligatory at social occasions — birthdays, office parties, mourning observances — and during any visit to someone's home, a signal of how welcome the visitors are and that God is present.

In the United States, an inverse correlation persists between income and diabetes. Since fattening food is cheap, the poor become heavier than the rich, and they exercise less and receive inferior health care. In India, the disease tends to directly track income.

"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

iht.com/asia

Photographs with commentary on the sweet shops and "sugar hospitals" in urban India.

The Economist

AUGUST 21ST-27TH 2010

Economist.com

The Republican to beat Obama?
Helping Pakistan
BHP Billiton, business behemoth
What to do about space junk
The politics of wind energy

Contest of the century China v India



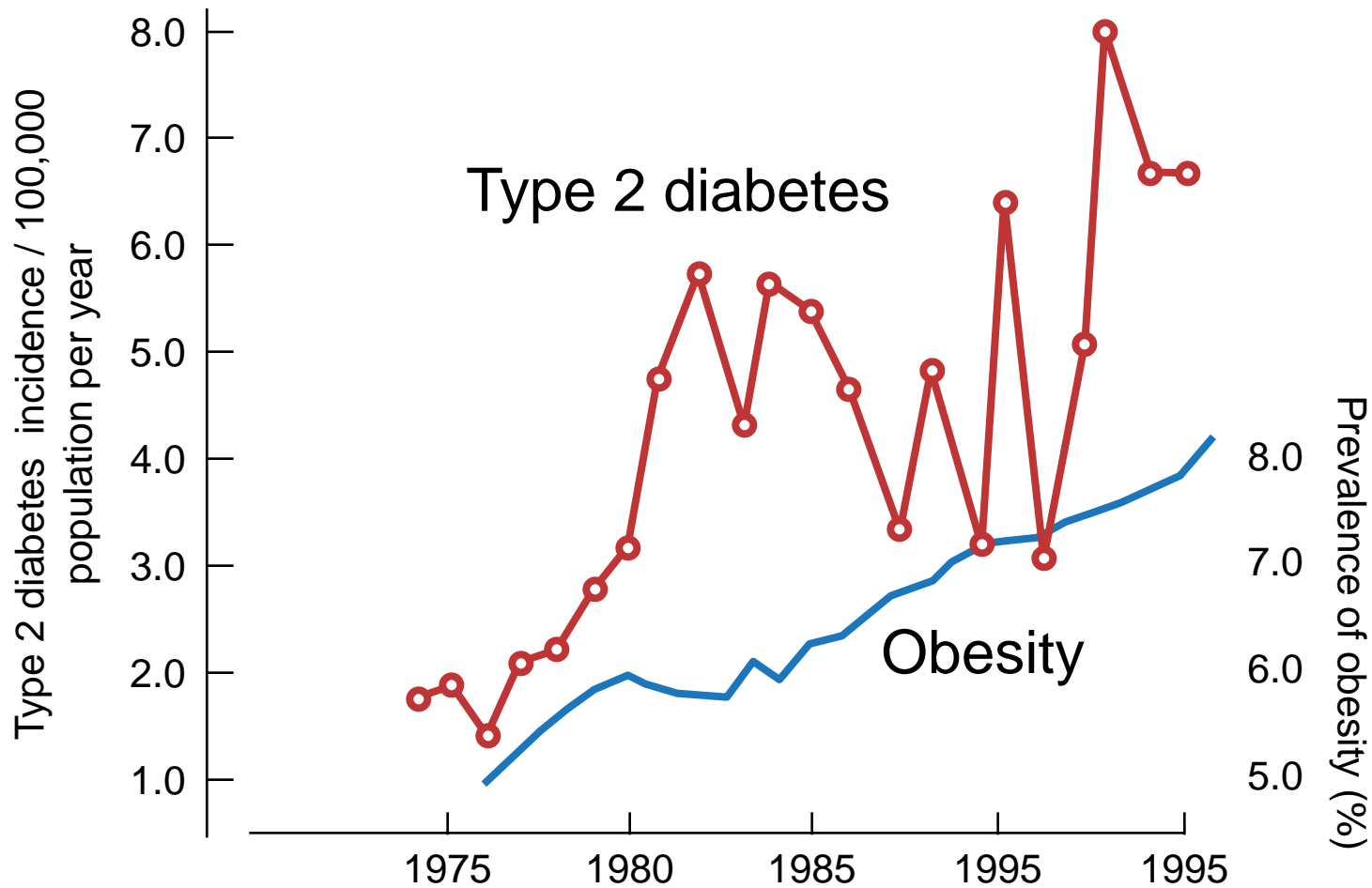
AustraliaA\$110.00
Bangladesh Tk 18.00
Brazil R\$12.00
Canada C\$14.50
China RMB 75

FR F\$57.00
Hong Kong HK\$ 70
India Rs 1200
Indonesia Rp 10,000
Japan ¥1,200 (incl. ¥1,163)

Korea Won 9,000
Malaysia M\$13.00
Malaysia & Singapore S\$12.00
Nepal NR320
Pakistan PKR 1,500

Philippines P\$30.00
Singapore S\$12.50 (inc. GST)
Sri Lanka L\$100
Taiwan NT\$750
Thailand Bht 250
Vietnam V\$37.50

Type 2 Diabetes in Children: Japan



The “Tangled Web of Obesity”

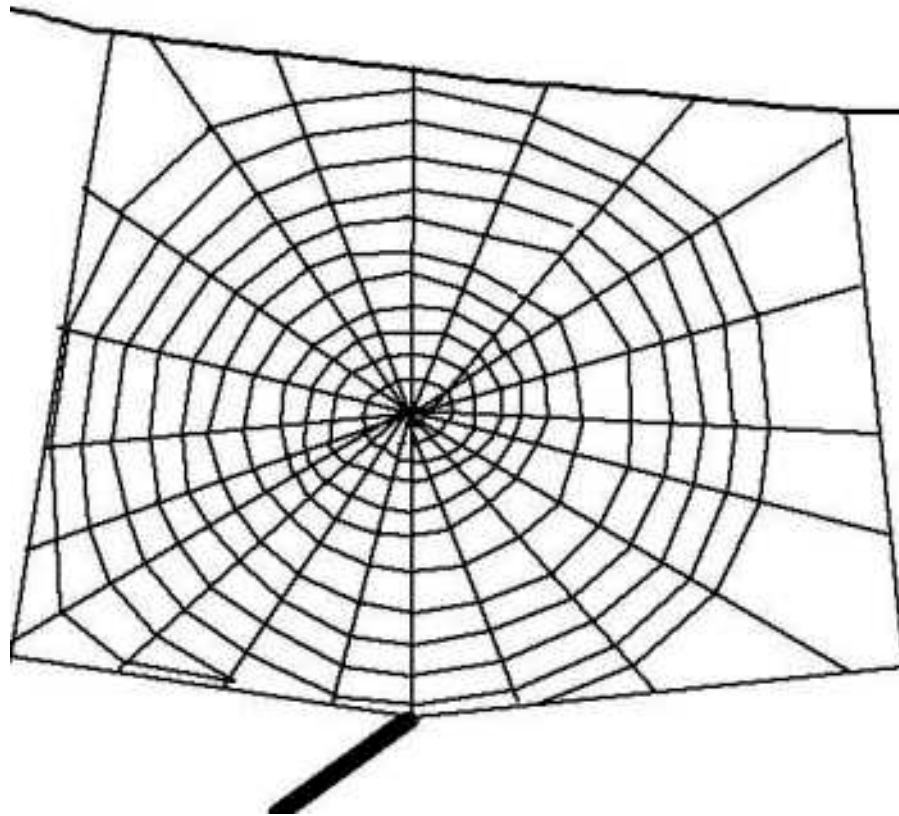
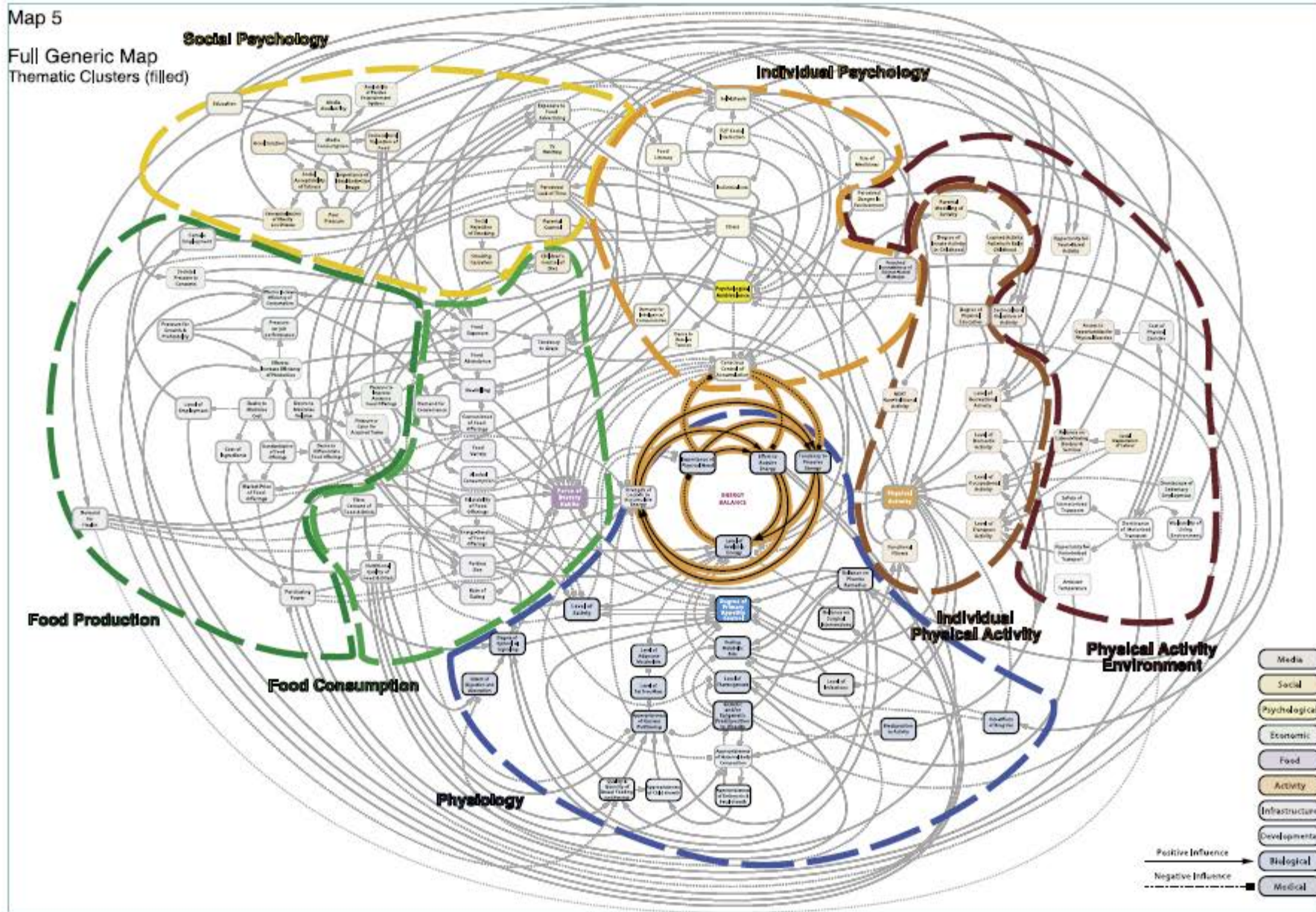


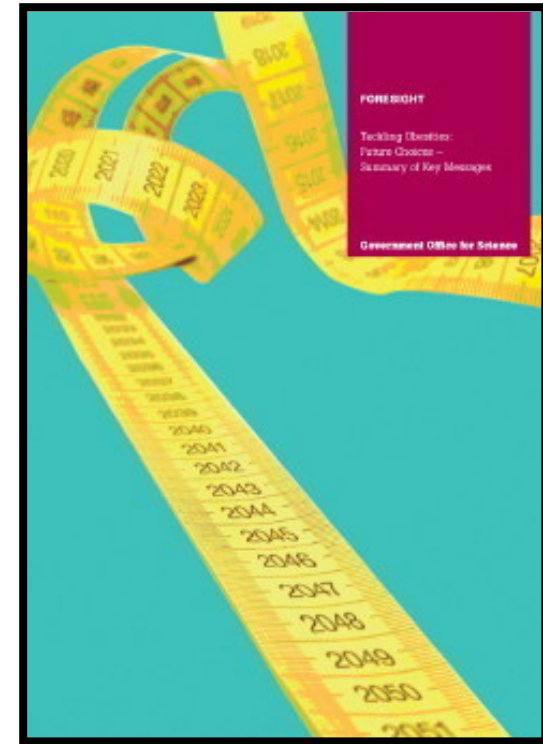
Figure 5.2: The full obesity system map with thematic clusters (see main text 5.1.2 for discussion)^{17,18} Variables are represented by boxes, positive causal relationships are represented by solid arrows and negative relationships by dotted lines. The central engine is highlighted in orange at the centre of the map.



Foresight Report (UK): Tackling Obesities - Future Choices Project

The key findings include:

- The obesity epidemic cannot be prevented by individual action alone & demands a societal approach.
- Tackling obesity requires far greater change than anything tried so far, and at multiple levels: personal, family, community & national.
- Preventing obesity is a societal challenge, similar to climate change. It requires partnership between government, science, business & civil society





RED SHIELD APPEAL

NEWS

- Help For Heroes
- Forces
- Backing Brit Biz
- Captain Crunch
- Jade Goody
- Sun Justice
- Sun Money
- Sun City
- Royals
- Columnists
- Go Green
- The Vault
- Maddie
- Scottish News
- Planet News
- Sun Says
- Dear Sun
- Gardening
- British X-Files
- Weird
- Alert Me

VIDEO

SPORT

- Football
- Sports Videos
- Dream Team
- F1 & Motorsport
- [\(+\)](#) more

SHOWBIZ

- Bizarre
- Bizarre USA
- Film
- Music
- [\(+\)](#) more

NEWS

Got a story? Text: **63000** - Email: talkback@the-sun.co.uk

Fatties cause global warming

By **BEN JACKSON**
Environment Editor

Published: 21 Apr 2009

ADD YOUR COMMENTS

THE rising number of fat people was yesterday blamed for global warming.

Scientists warned that the increase in big-eaters means more food production - a major cause of CO2 gas emissions warming the planet.

Overweight people are also more likely to drive, adding to environmental damage.



Big issue ... obesity is global problem

RELATED STORIES



Fattest teen's 12st weight loss

PROUD Georgia tells how she shed title of UK's fattest teen along with 12st in 7 months

- ▶ **Your family may be killing you**
- ▶ **Heavy brigade in obesity crisis**
- ▶ **The Sun Says**

MYSun



WHAT DO YOU THINK?
Big issues:
Referendums the key?

DISCUSS

- ▶ Six of the best: Lions win simply Fab?
- ▶ Big Brother: Had enough of 'Halfwit'?
- ▶ Join now it's free!
- ▶ Log In

Give your savings a lift.

Carbon emissions fuelled by high rates of obesity

Alok Jha

The Guardian, Monday 20 April 2009

[A larger](#) | [smaller](#)



High rates of obesity are adding to climate crisis, says a new study. Photograph: PA

High rates of obesity in richer countries cause up to 1bn extra tonnes of greenhouse gas emissions every year, compared with countries with leaner populations, according to a study that assesses the additional food and fuel requirements of the overweight. The finding is particularly worrying, scientists say, because obesity is on the rise in many rich nations.

"Population fatness has an environmental impact," said Phil Edwards, from the London School of Hygiene and Tropical Medicine. "We're all being told to stay fit and keep our weight down because it's good for our health. The important thing is that staying slim is good for your health and for the health of the planet."

The study, carried out by Edwards and Ian Roberts, is published today in the International Journal of Epidemiology.

In their model, the researchers compared a population of 1 billion lean people, with

Australia: COAG Prioritises Diabetes Prevention: April 13th 2007

COAG MEETING | Greenhouse emissions, diabetes in focus

Public health crisis top of leaders' list

MARK KENNY
POLITICAL EDITOR
CANNBERRA

MAJOR new spending to address type 2 diabetes, which afflicts around a million Australians, will be among the top agenda items when the nation's territory, state and Commonwealth heads of government meet in Canberra this morning at the Council of Australian Governments.

The initiative is part of a "human capital" approach by the states in an attempt to lift productivity and workforce participation levels.

Premiers, who met yesterday, will also use the COAG meeting to push for a 60 per cent cut of the 2000 level greenhouse gas emissions by 2050, after all states formally came on board at yesterday's Council of Fed-

NEWS AS IT
HAPPENS

Adelaide^{now}...

NEWS.com.au/adalaidenow

eration meeting. States have agreed to pass identical legislation by December of next year to give effect to the targets.

However, hopes of early progress faded when the Prime Minister yesterday indicated that greenhouse policy would be driven by his emissions trading task group rather than by COAG.

Premier Mike Rann told *The Advertiser* the states were eager to gain Commonwealth support for an action plan to address diabetes "which was reaching epidemic proportions in Australia".

He said too many young

people were being afflicted by diabetes, often linked to issues such as childhood obesity.

"What we hope to get out of the meeting at the very least is a commitment to a national partnership on tackling a burgeoning social problem and burgeoning health problem that in many cases is preventable," Mr Rann said.

"Hopefully, it will lead to a national campaign on diabetes like the successful one on HIV and AIDS several years ago."

Approximately 100,000 people are diagnosed with diabetes in Australia each year.

Business reforms

PRIME Minister John Howard has proposed a significant reform of business regulations at today's COAG meeting and has placed \$110 million on the table as a sweetener if states agree to hand over certain functions.

Premier Mike Rann said inconsistencies between states over the recognition of trade qualifications was a continuing source of aggravation.

In addition to mutual recognition of 22 trade qualifications, it was also planned to reform laws so people moving interstate would not need to transfer their car registration or licence until it expired.



DELEGATION: SA Premier Mike Rann leads his counterparts - Clare Martin (NT), Peter Beattie (Qld), Morris Iemma (NSW), Paul Lennon (Tas), Alan Carpenter (WA), John Stanhope (ACT) and Steve Bracks (Vic) - in Canberra yesterday.

Picture: RAY STRANGE

Preventative Health Task Force: Key Action Areas



AUSTRALIA: THE HEALTHIEST COUNTRY BY 2020



Technical Report 1
Obesity in Australia: a need for urgent action
Including addendum for October 2008 to June 2009

Prepared for the National Preventative Health Taskforce
by the Obesity Working Group

Key action areas

- Key action area 1:** Drive environmental changes throughout the community that increase levels of physical activity and reduce sedentary behaviour
- Key action area 2:** Drive change within the food supply to increase the availability and demand for healthier food products, and decrease the availability and demand for unhealthy food products
- Key action area 3:** Embed physical activity and healthy eating in everyday life
- Key action area 4:** Encourage people to improve their levels of physical activity and healthy eating through comprehensive and effective social marketing
- Key action area 5:** Reduce exposure of children and others to marketing, advertising, promotion and sponsorship of energy-dense nutrient-poor foods and beverages
- Key action area 6:** Strengthen, upskill and support the primary healthcare and public health workforce to support people in making healthy choices
- Key action area 7:** Address maternal and child health, enhancing early life and growth patterns
- Key action area 8:** Support low-income communities to improve their levels of physical activity and healthy eating
- Key action area 9:** Reduce the obesity prevalence and burden in Indigenous communities
- Key action area 10:** Build the evidence base, monitor and evaluate effectiveness of actions

Modern Society: minimising daily muscular activity!

Then

Now



Transport



Domestic



Work



Urban Planning: Address Physical Activity & Sedentary Behaviour

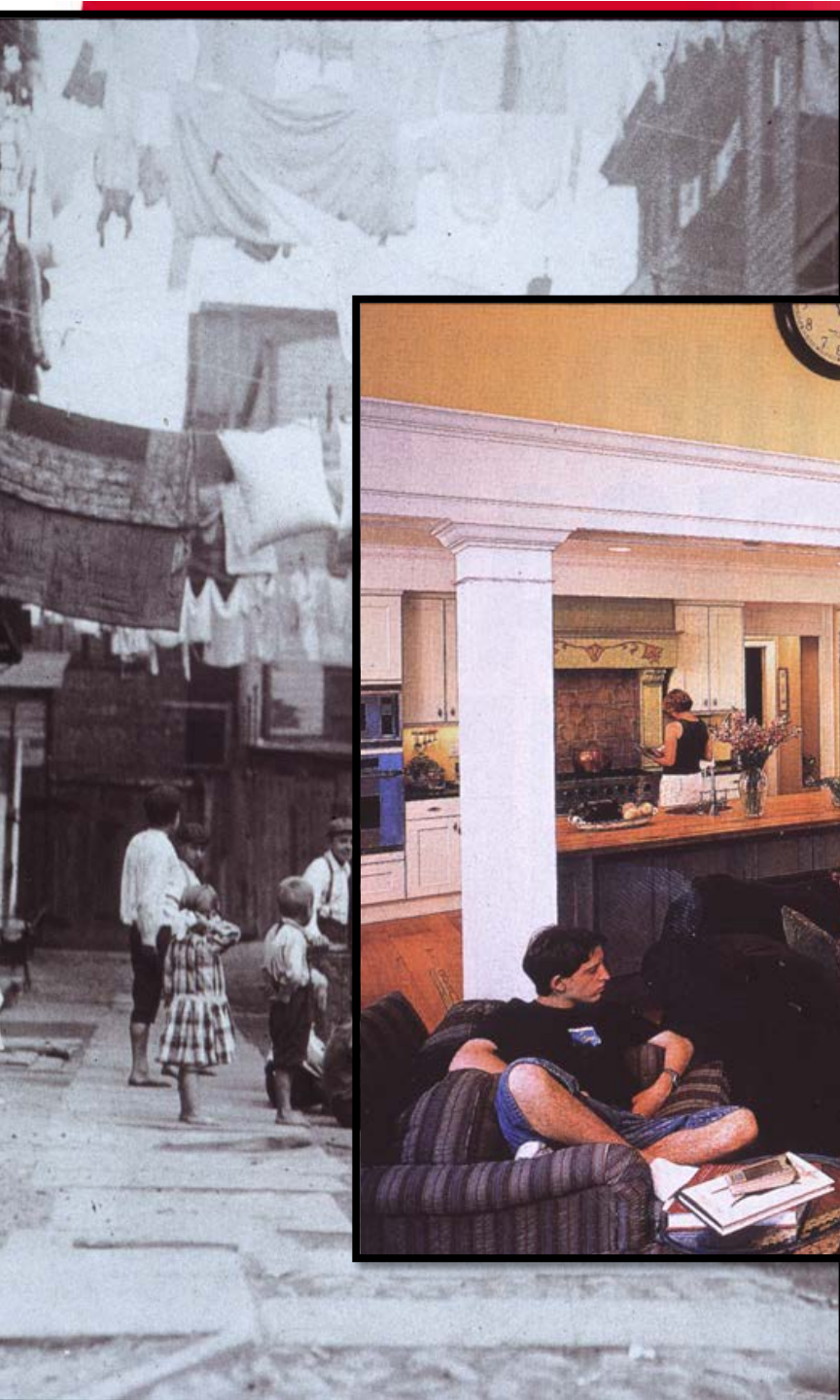
Environmental Issues in Diabetes Prevention



Thanks to Professor Ari Friedman: Magill University

Environmental Issues in Diabetes Prevention

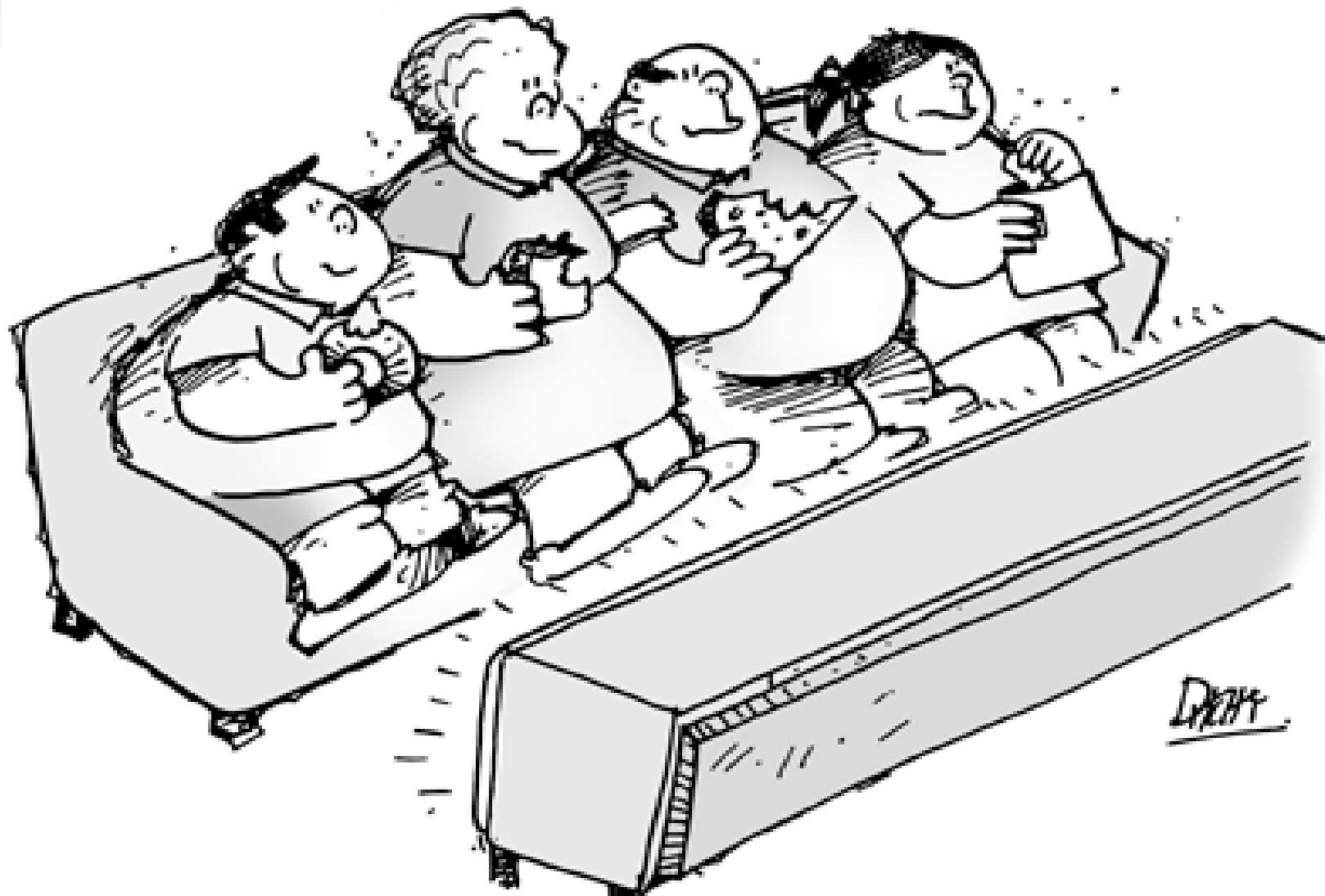




An Environmentally Friendly Solution to the Obesity Epidemic



TV Viewing & Diabetes



WHY FAMILIES NEED WIDE SCREEN TV.

Television Viewing Time and Mortality

The Australian Diabetes, Obesity and Lifestyle Study (AusDiab)

David W Dunstan, Elizabeth LM Barr, Genevieve N Healy, Jo Salmon,
Jonathan E Shaw, Beverley Balkau, Dianna J Magliano, Adrian J Cameron,
Paul Z Zimmet, Neville Owen

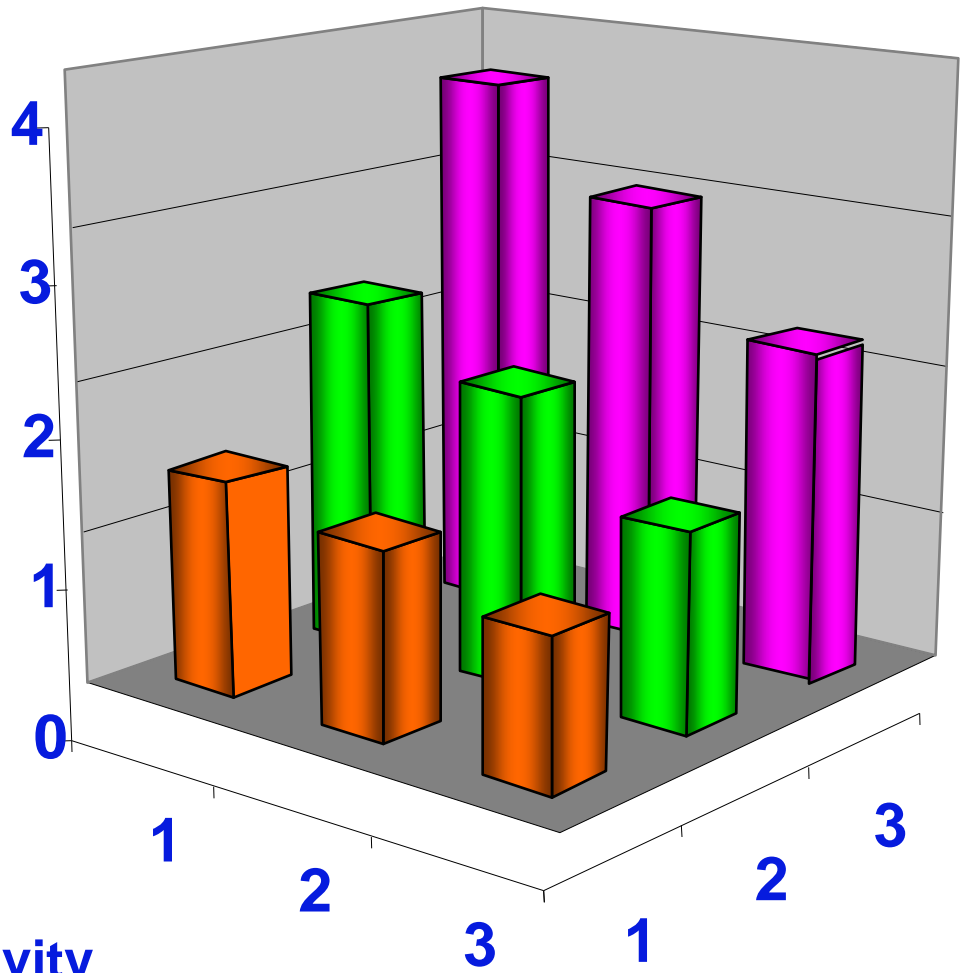
Circulation 2010 121: 384-391



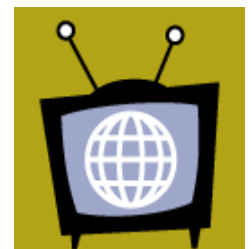
Television Viewing Time and Mortality: The Australian Diabetes, Obesity and Lifestyle Study (AusDiab)
D.W. Dunstan, E.L.M. Barr, G.N. Healy, J. Salmon, J.E. Shaw, B. Balkau, D.J. Magliano, A.J. Cameron, P.Z. Zimmet and N. Owen
Circulation 2010;121:384-391; originally published online Jan 11, 2010;
DOI: 10.1161/CIRCULATIONAHA.109.894824
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75214
Copyright © 2010 American Heart Association. All rights reserved. Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
<http://circ.ahajournals.org/cgi/content/full/121/3/384>

Odds Ratio For Obesity: TV Viewing Versus Physical Activity: AusDiab 2000

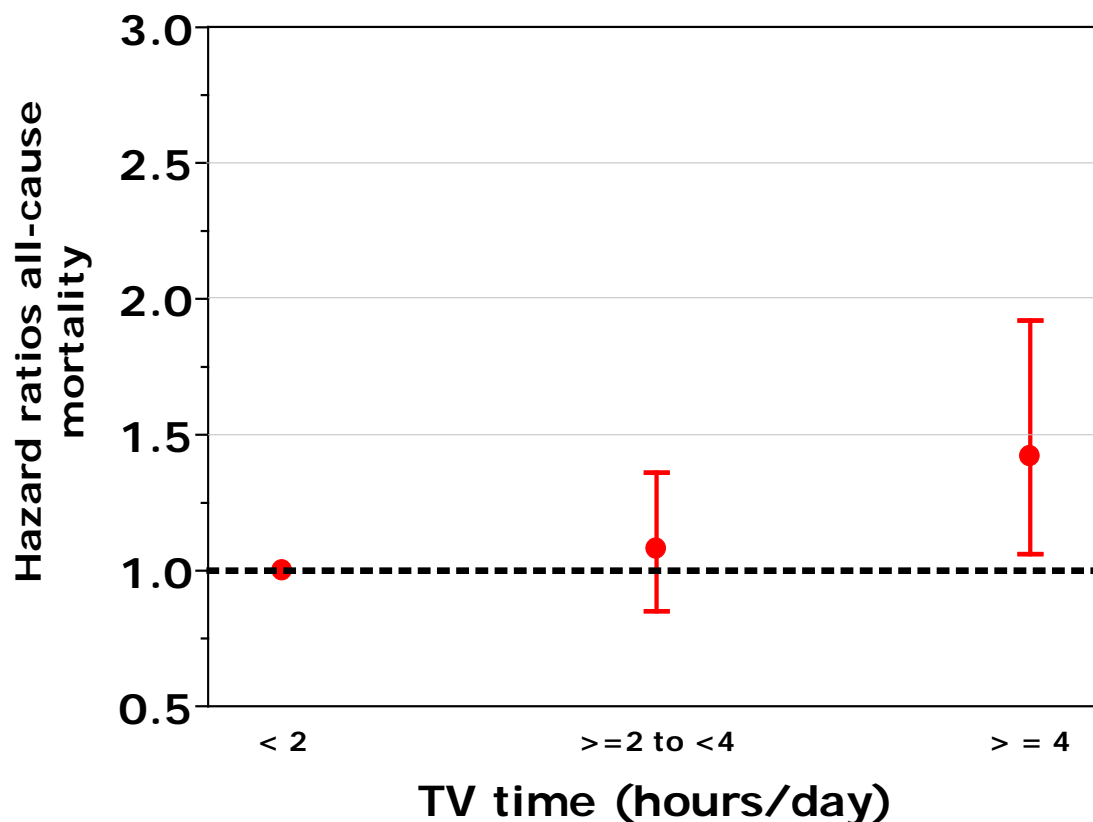


Physical activity time tertiles



TV viewing time tertiles

AusDiab: TV time and all-cause mortality (hazard ratios)



Adjusted for age, sex, smoking, education (≥ 12 years), total energy intake, diet quality index, **leisure-time exercise**, **waist circumference**, hypertension (blood pressure $\geq 140/90$ mmHg or anti-hypertensive medication use), total plasma cholesterol, HDL-cholesterol (mmol/L), serum-triglycerides (mmol/L, log), lipid-lowering medication use, previously reported cardiovascular disease (angina, myocardial infarction or stroke), glucose tolerance status).

Address advertising, food supply & quality

James and Zimmet “Report”

Regulatory measures needed to prevent diabetes in Australia

- Ban all marketing of food to children, including television advertisements.
- Establish strict food and physical activity requirements for schools.
- Remove junk foods and drinks from all publicly funded premises.
- Require “traffic light” food labelling (based on nutritional profiling) on all foods, drinks and meals, wherever sold.
- Adjust fiscal policies to progressively change the relative prices of foods and drinks high in fat or sugar in favour of vegetables and fruit.
- Specify urban environmental requirements favouring pedestrians and cyclists. ◆

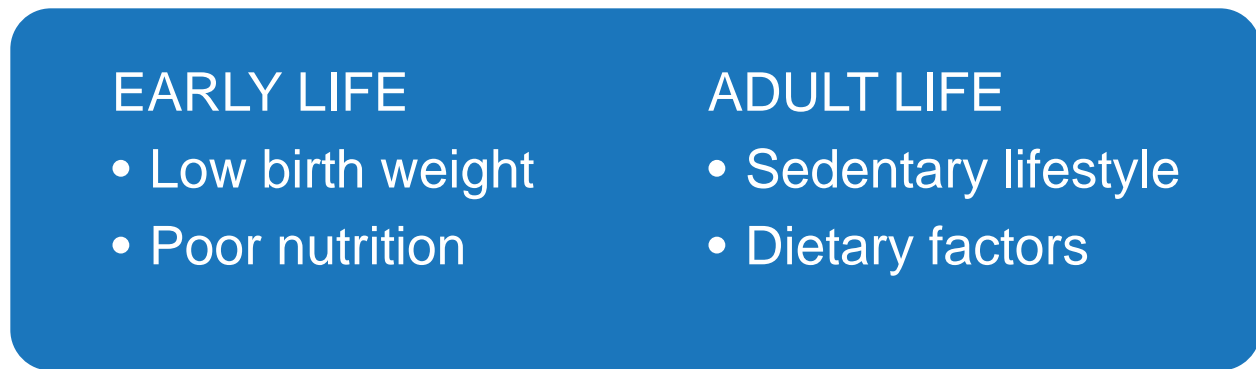
The Jamie Oliver School Lunch Program



Prevention Of Diabetes: The New Paradigm

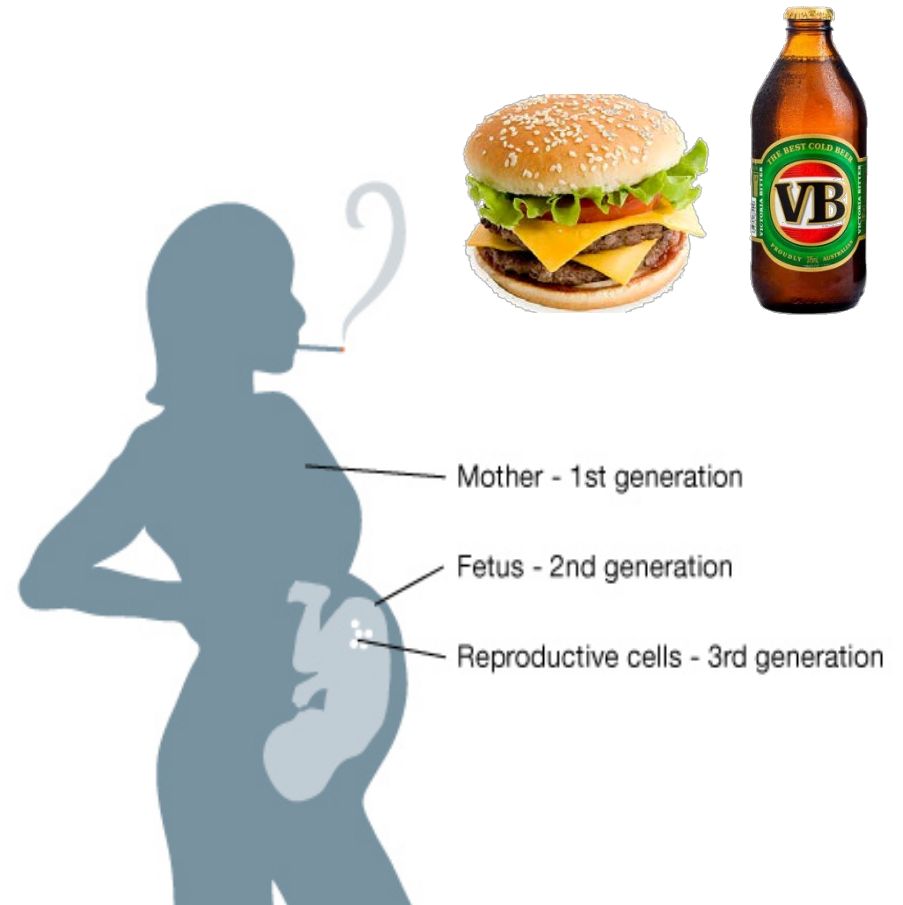
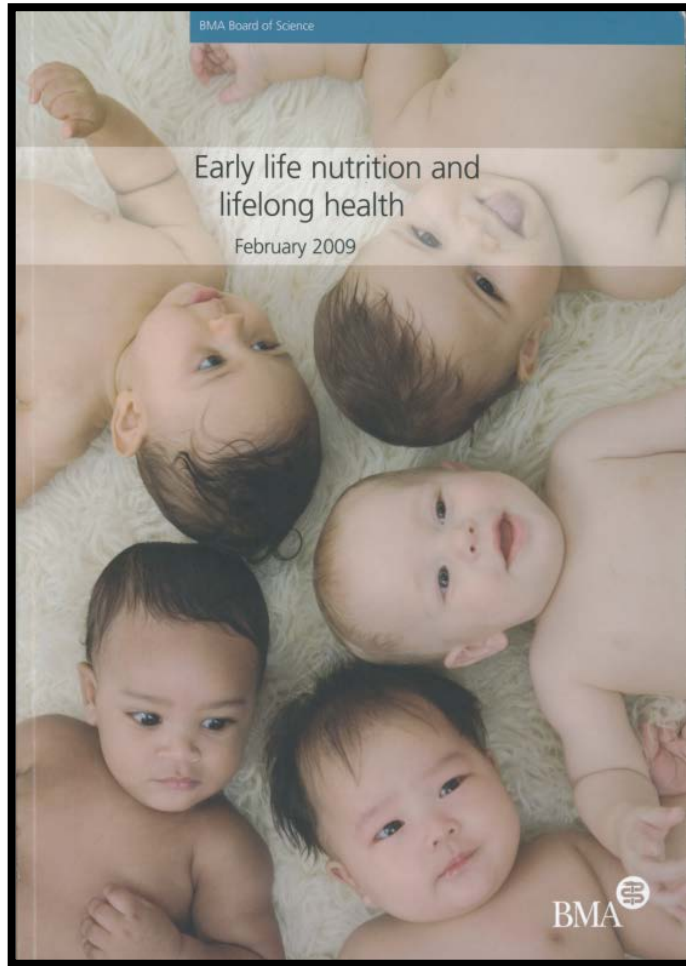
Genetic-Environment Interaction for Type 2 Diabetes

ENVIRONMENT



CARDIOVASCULAR DISEASE

Foetal Programming & Intergenerational Risk



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
 - CVD (heart attacks, strokes)
 - Hypertension
 - Obesity



Rotterdam, 1945

Diabetes in Cambodia (30 years after Pol Pot) regime)

Diabetes and associated disorders in Cambodia: two epidemiological surveys

Hilary King, Lim Keuky, Serey Seng, Touch Khun, Gojka Roglic, Michel Pinget

Summary

Background The Asia-Pacific region is thought to be severely affected by diabetes. However, reliable, standardised data on prevalence and characteristics of glucose intolerance in Asian populations remain sparse. We describe the results of two field surveys undertaken in Cambodia in 2004.

Methods 2246 randomly selected adults aged 25 years and older were examined in two communities, one rural (Siemreap) and one semi-urban (Kampong Cham). The diagnosis of diabetes and impaired glucose tolerance was based on 2-h blood glucose estimation using criteria recommended by the latest report of a WHO Expert Group. Blood pressure, anthropometry, habitual diet, and other relevant characteristics were also recorded.

Findings Prevalence of diabetes was 5% in Siemreap and 11% in Kampong Cham. Prevalence of impaired glucose tolerance was 10% in Siemreap and 15% in Kampong Cham. About two-thirds of all cases of diabetes were undiagnosed before the survey. Prevalence of hypertension was 12% at Siemreap and 25% at Kampong Cham. People in Kampong Cham had higher estimates of central obesity than those in Siemreap.

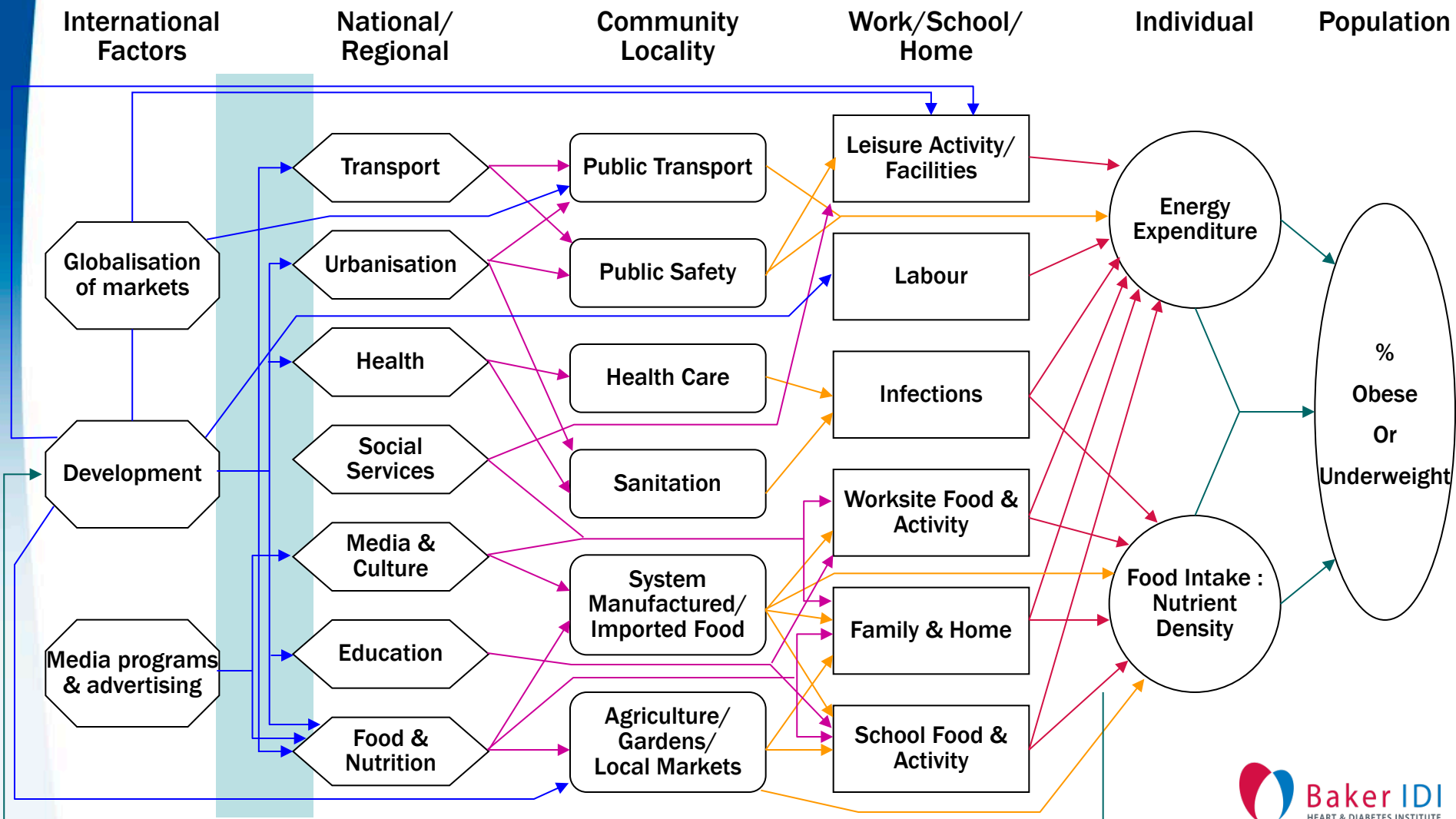
Interpretation Diabetes and hypertension are not uncommon in Cambodia. A quarter of all adults in the chosen suburban community had some degree of glucose intolerance. Since Cambodian society is relatively poor, and lifestyle is fairly traditional by international standards, these findings are unexpected.

Lancet 2005; 366: 1633-39

Centre Européen d'Etude du Diabète, 67200 Strasbourg, France (H King MD, Prof M Pinget MD); Cambodian Diabetes Association, Phnom Penh, Cambodia (L Keuky PhD, S Seng MD, T Khun MD); and Department of Chronic Diseases and Health Promotion, World Health Organization, Geneva, Switzerland (G Roglic MD)

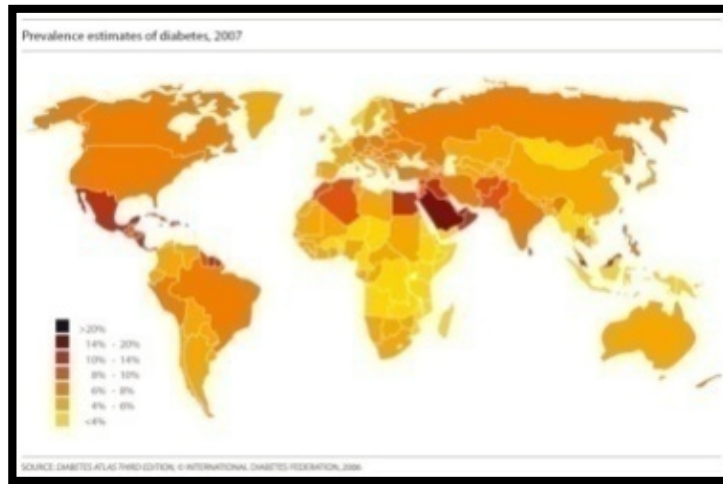
Correspondence to: Prof Michel Pinget association-ceed@wanadoo.fr

Policies and processes influencing the prevalence of obesity

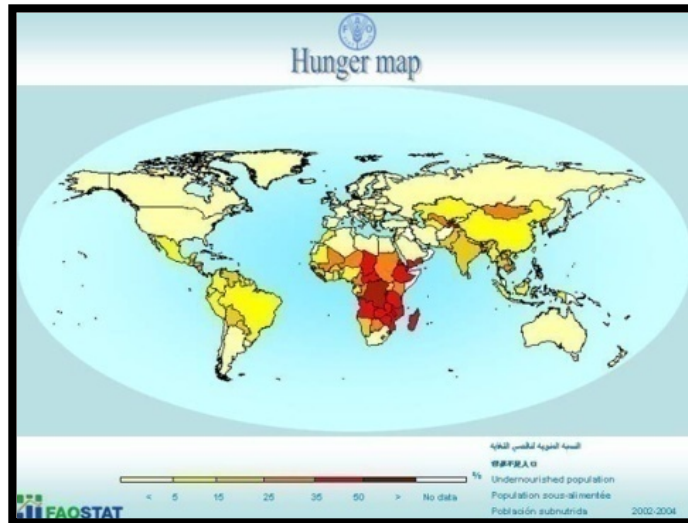


National Perspective

Source: Population-Based Prevention of Obesity. Kumanyika et al 2008. DOI:



Asia: the global epicentre of diabetes and under-nutrition!



The Metabolic Syndrome

(“Deadly Quartet” or “Awesome Foursome”)

- A cluster of risk factors for diabetes & cardiovascular disease consisting of:
 - IGT, IFG & Diabetes
 - Abdominal obesity
 - Hypertension
 - Dyslipidaemia



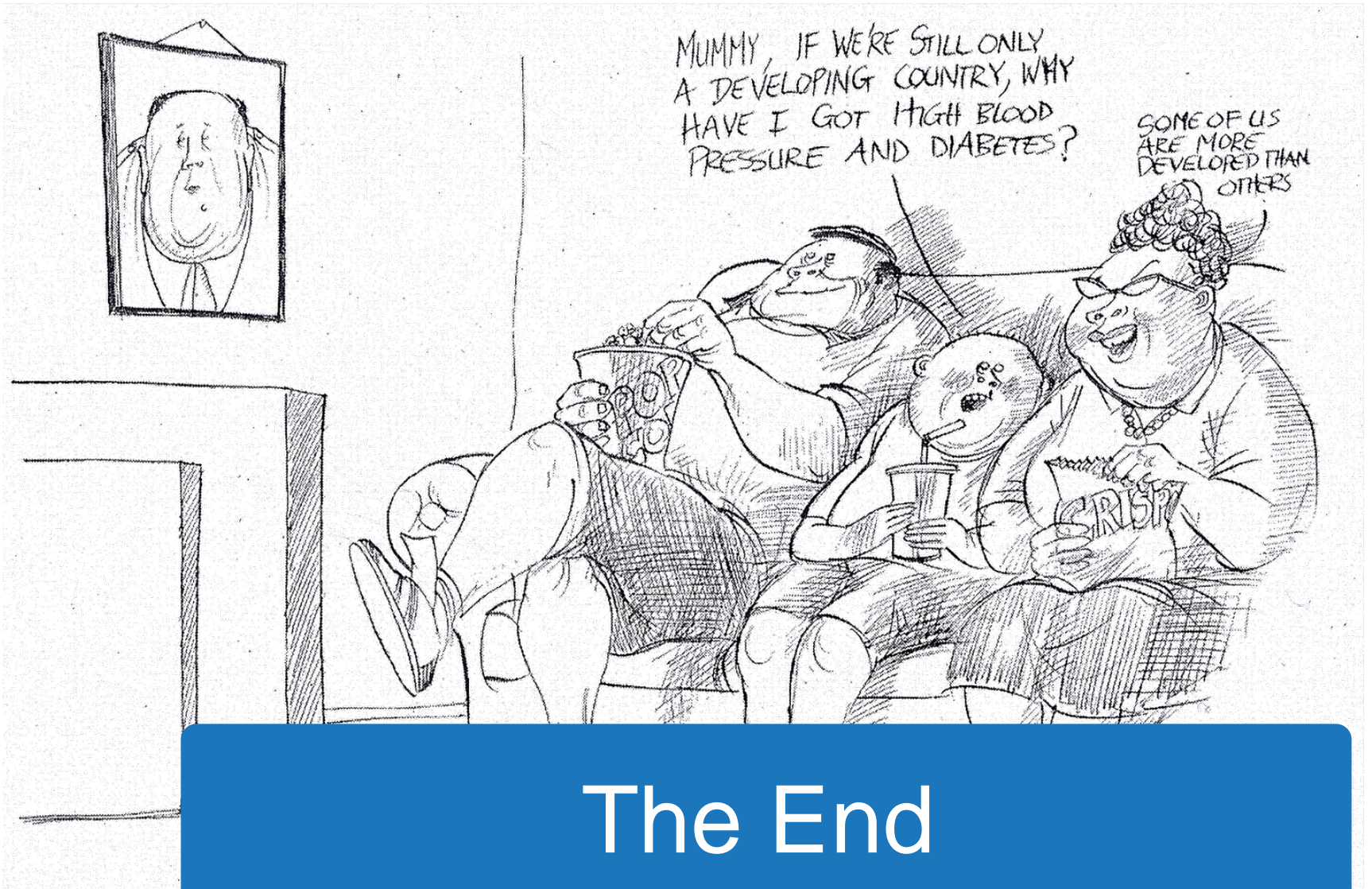
Sleep Apnea & Diabetes: A New Epidemic



Conclusions

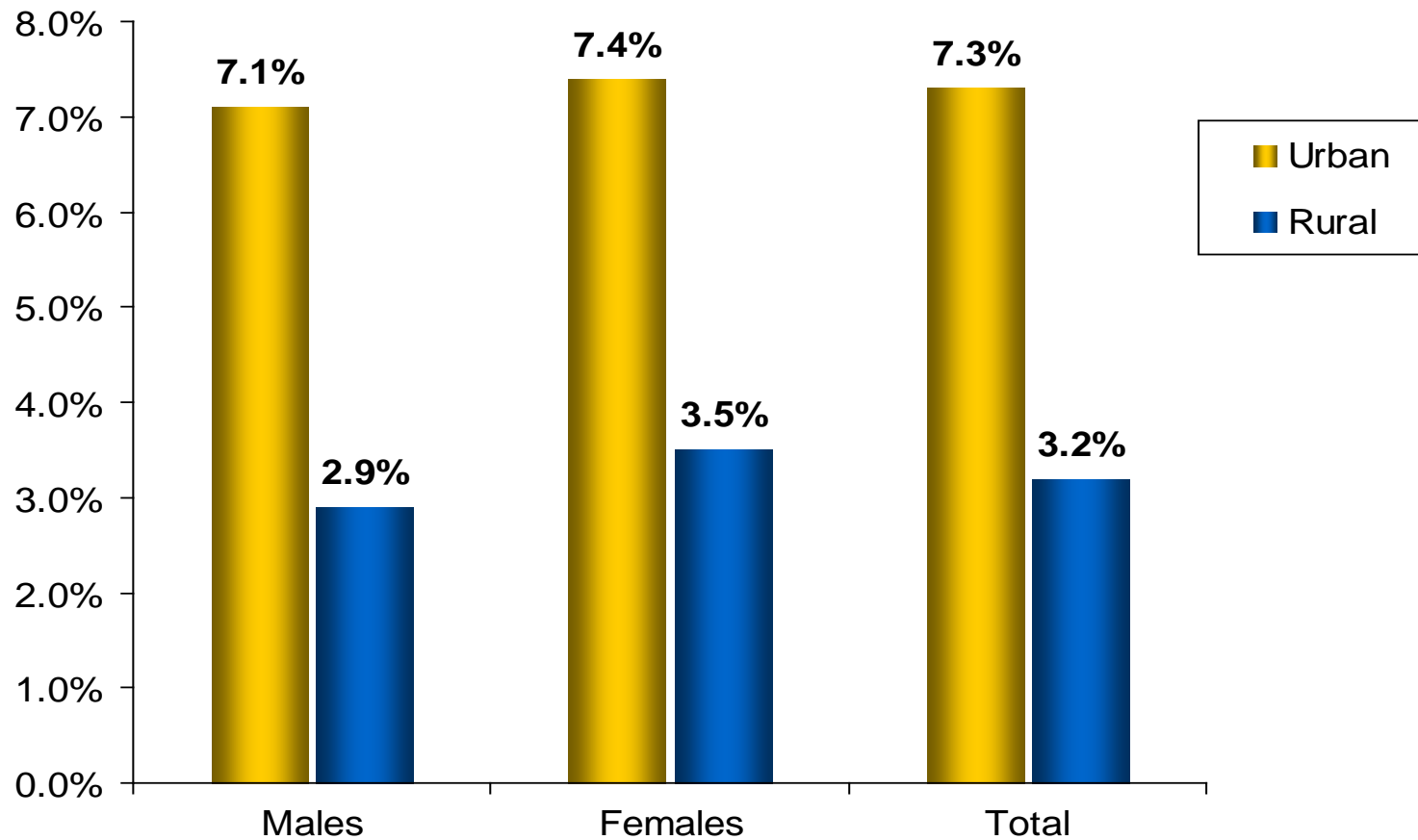
- Diabetes continues to rise exponentially in Asia & globally
- Ageing, lifestyle change & urbanisation have been targetted as the main drivers but in Asian nations, the story may be very different
- A greater focus on early life risk factors eg maternal nutrition may lead to more effective strategies to halt this global “perfect storm” of diabetes
- By 2020, diabetes is set to bankrupt the economies of many Asian nations unless action is taken





The End

Diabetes Prevalence in Cambodia



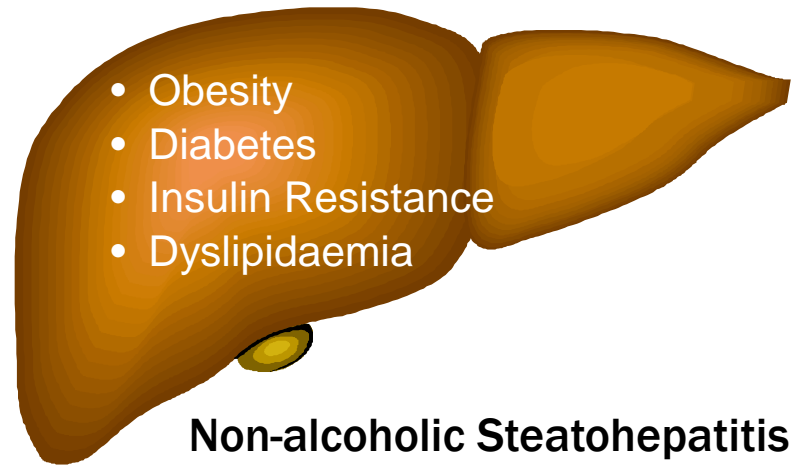
New Confounding Disorders Accelerating the Diabetes Epidemic



Sleep Apnoea



HIV/AIDS Therapy



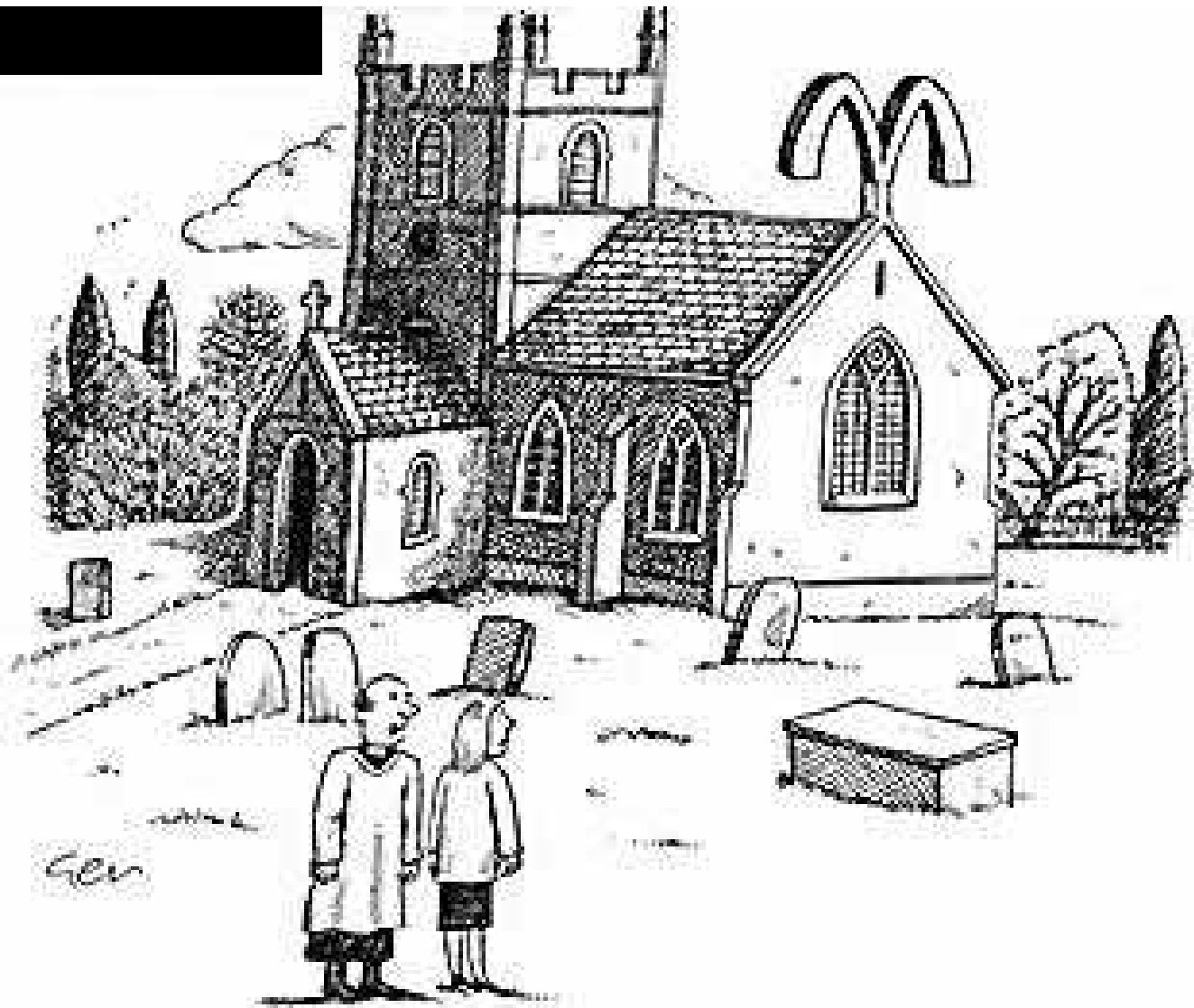
Non-alcoholic Steatohepatitis (Primary NASH)

DIABETES CARE, VOLUME 27, NUMBER 2, FEBRUARY 2004

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



"I wanted a bigger congregation so I asked God for a sign!"

Prevalence of overweight and obesity in 10yr old girls & boys in selected nations

