Epidemiology of cardiovascular disease (CVD) in the Asia Pacific (AP) region

Lim Yean Teng on behalf of Azhari Rosman
In 2009 2nd ESC Asia my emphasis was

“..from identifying who *has* the disease to

... which patients *will develop* the disease…”

In 2010 3rd ESC Asia my emphasis is

“..children of *today* should not be patients of *tomorrow* …”
Overview:

CVD epidemiology

• Increased prevalence of CVD & risk factors
• Highlighting relationships: increased adiposity + dysglycaemia in CVD
• Similarities/differences with West
• Recognising children who are overweight as “future adults at risk”
Epidemiology of CVD in the Asia Pacific region:

What *Has Not* Changed…
Ranjan Das, CEO and MD of SAP India died after a massive cardiac arrest in Mumbai in 2009. One of the youngest CEOs, he was 42 years old. He was active in sports, was a fitness freak and a marathon runner. It was common to see him run on Bandra’s, Carter Road. Just after Deepavali on 21st Oct, he returned home from his gym after workout, collapsed with massive heart attack and died. He is survived with his wife and 2 very young kids.
• Cardiovascular disease is still the leading cause of death worldwide
• The Asia Pacific region accounts for about half of the global burden of CVD and proportion is likely to increase during the next few decades

Epidemiologic relationships

Diabetes

Diabetes

Diabesity

Obesity

CardioDiabetes

CV Risk development

CV Disease

Estimated overweight & obesity (BMI $\geq 25\text{kg/m}^2$) prevalence, males, aged 15+

2002


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Estimated overweight & obesity (BMI $\geq 25$kg/m$^2$) prevalence, males, aged 15+

2005


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Estimated overweight & obesity (BMI $\geq 25$kg/m$^2$) prevalence, males, aged 15+

2010


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Updated REACH: Overweight & obesity highly prevalent in multiple risk factor patients in most regions*

Variation of overweight and obesity in the Multiple risk factor REACH registry population (% of regional population)

*Data shown may differ slightly from published abstracts owing to a subsequent database lock.

WPRO, WHO Western Pacific Region

Bhatt DL et al, on behalf of the REACH Registry Investigators. JAMA 2006;295:180–189

OBESITY WPRO 45% = US Obesity criteria
BMI & body fat
Asians vs Europeans

Chinese

Female
BMI 21.1
32%

Male
BMI 23.7
25%

European

Women
BMI 23
30%

Men
BMI 25
25%

Body fat %

20 21 22 23 24 25 26 27 28 29 30

High risk adiposity

Visceral fat = Waist circumference > BMI

(Not much change in BMI)

Baseline

One-year follow-up

BMI 29.5

BMI 28.5

-1yr after diet programme
Amount of visceral fat, as seen on the computed tomography (CT) scan of the abdomen, has an excellent correlation with waist circumference as shown by the adjoining graph.

Note the high correlation coefficient (r=0.80)

# Metabolic syndrome: ethnic-specific values for waist circumference

<table>
<thead>
<tr>
<th>Country/ethnic group</th>
<th>Waist circumference</th>
</tr>
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<tbody>
<tr>
<td><strong>Europids</strong></td>
<td></td>
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<tr>
<td>In the US, ATP III values (102 cm male; 88 cm female) are likely to continue to be used for clinical purposes</td>
<td>Male $\geq 94$ cm</td>
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<td></td>
<td>Female $\geq 80$ cm</td>
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<tr>
<td><strong>South Asians, based on a Chinese, Malay and Asian-Indian population</strong></td>
<td>Male $\geq 90$ cm</td>
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<td>Female $\geq 80$ cm</td>
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<td><strong>Chinese</strong></td>
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<td>Female $\geq 80$ cm</td>
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<td><strong>Japanese</strong></td>
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<td>Female $\geq 80$ cm</td>
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<tr>
<td><strong>Ethnic South and Central Americans</strong></td>
<td>Use South Asian recommendations until more specific data are available</td>
</tr>
<tr>
<td><strong>Sub-Saharan Africans</strong></td>
<td>Use European data until more specific data are available</td>
</tr>
<tr>
<td><strong>Eastern Mediterranean and Middle East (Arab) population</strong></td>
<td>Use European data until more specific data are available</td>
</tr>
</tbody>
</table>

Modification of the NCEP ATP III definitions of the metabolic syndrome for use in Asians identifies individuals at risk of ischemic heart disease

Derrick Kenneth F

Mak c, Kwok Chung Tai c, *

Abstract

The association between diabetes mellitus or associated with the I sex, ethnic group at (WC) used to define 38157.4 person-year with increased risk criteria, were also at diagnosis of the MS © 2005 Elsevier Ireland

Keywords: Metabolic

respectively in Asian in subjects without e. The risk of IHD adjustment for age, waist circumference This study provided criteria was associated with the NCEP ATP III for WC used for the

Increased cardiovascular disease mortality in the metabolic syndrome

Cardiovascular disease mortality

RR (95% CI), 3.55 (1.98-6.43)

Follow-up (years)

Cumulative hazard (%)

Metabolic syndrome
Yes

No

RR, relative risk

Taiwan Metabolic Syndrome: Risk for CHD, stroke

Kaplan–Meir curves of 11-year free from coronary heart disease events by status of metabolic syndrome at study entry (left) and by metabolic syndrome numbers at study entry (right).

CHD, coronary heart disease

Adult obesity: US trends

Behavioral Risk Factor Surveillance System (BRFSS). BMI 30 or 30 lb overweight for 5’4” person

Source: http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps
Obesity in Asia Pacific: Trends

(BMI $\geq 25 \text{ kg/m}^2$)

Australia

China

Japan

Prevalence (%)

Year


BMI, body mass index

CMY Lee APCSC, Obesity Reviews 2007:8;191–6
Asia: Comparing prevalence of adult obesity and diabetes mellitus

A) Proportion of overweight and obese adults

B) Prevalence of diabetes

Kun-HoYoon Lancet 2006:368; Nov1681-1687

(A) Prevalence of diabetes in selected nations


USA prevalence DM =8%

Kun-Ho Yoon Lancet 2006;368; Nov 1681-1687
Children adiposity:
UK trends
(percentage overweight + obese)

22% boys

28% girls
Relationship of
(I) Visceral adipose tissue & insulin

Visceral adipose tissue volume per unit surface area (mL/m²)

Glucose disposal (mg/kgLBM/min)

Female
Male

Relationship of:

(II) Adipose tissue and inflammatory cells

Adipose tissue associated with more inflammatory cells

J of Lipid Research 2005; 46:2347-2355
Summary

• CV Risk factors are interlinked with **metabolic abnormalities (adiposity & dysglycaemia)**

• Epidemiology of CVD is **influenced** by increasing global adiposity both in the older and younger populations

• The **cumulative** impact of obesity/adiposity in the young + the prevalence of metabolic syndrome + CV risk factors including dysglycaemia will further burden the present **high** prevalence of CVD in Asia
Issue for the future

Will the recent increases in life expectancy & overall reduction in CVD mortality be reversed by rising global prevalence and the earlier onset of obesity?