7th NATIONAL NUTRITION SURVEY: 2008

Clinical and Health Survey Component

Prevalence of Selected Risk Factors to NCDs: Part II
**Rationale:**

**CLINICAL AND HEALTH**

- National prevalence data of related risk factors to NCDs are important measurement of disease burden of which may be used in the health planning and policy making; and

- Trends in the prevalence of these NCD risk factors are useful in monitoring the effectiveness of the current preventive interventions on nutrition and health.
Specific Objectives:

**CLINICAL AND HEALTH**

- To provide national prevalence of four (4) NCDs risk factors (hypertension, diabetes, dyslipidemia and android obesity) and three (3) behavioral risk factors (smoking, alcohol drinking and physical inactivity) among Filipino adults 20 years old and over;

- To provide prevalence trends of these risk factors from 1998 to 2008
Methodology:

- Follows the general NNS Methodology and covered 25% of sample Households
- Participants: 7,700 adults, 20 years and over from 2,859 sample households
- Measurement of blood pressure (BP) using conventional sphygmomanometer
- Blood samples drawn by venipuncture for fasting blood sugar (FBS) and blood lipids
- Validated questionnaires recommended by the World Health Organization (WHO) for the prevalence of behavioral risk factors
RESULTS

Adults 20 years and over
Prevalence of selected risk factors, by sex: Philippines: 2008

- **Hypertension**
  - Females: 22.2%
  - Males: 29.1%

- **Diabetes**
  - Females: 5.5%
  - Males: 4.0%

- **High Total-c**
  - Females: 15%
  - Males: 7.3%

- **High LDL-c**
  - Females: 11.2%
  - Males: 8.1%

- **Low HDL-c**
  - Females: 57.8%
  - Males: 71.1%

- **High Triglyceride**
  - Females: 18.5%
  - Males: 15%
Clinical Threshold for Anthropometric Indicators (WHO)

<table>
<thead>
<tr>
<th>Waist Circumference (WC)</th>
<th>Waist-Hip Ratio (WHR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Males</strong></td>
<td><strong>Females</strong></td>
</tr>
<tr>
<td>≥ 102 cm or 40 inches, android obese</td>
<td>≥ 88 cm or 35 inches, android obese</td>
</tr>
<tr>
<td>≥ 1.0, android obese</td>
<td>≥ 0.85, android obese</td>
</tr>
</tbody>
</table>
Mean waist circumference (WC) and percent distribution of WC, by age and sex, Philippines: 2008

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Mean WC</th>
<th>% Distribution by various levels of WC*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 90 cm</td>
<td>90 to 101 cm</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
</tr>
<tr>
<td>79.4</td>
<td>83.1</td>
<td>13.7</td>
</tr>
<tr>
<td>20-29</td>
<td>75.6</td>
<td>93.2</td>
</tr>
<tr>
<td>30-39</td>
<td>80.2</td>
<td>80.6</td>
</tr>
<tr>
<td>40-49</td>
<td>81.3</td>
<td>79.4</td>
</tr>
<tr>
<td>50-59</td>
<td>82.2</td>
<td>76.1</td>
</tr>
<tr>
<td>60-69</td>
<td>80.0</td>
<td>82.2</td>
</tr>
<tr>
<td>≥ 70</td>
<td>78.1</td>
<td>83.6</td>
</tr>
<tr>
<td>Females</td>
<td>78.1</td>
<td>59.5</td>
</tr>
<tr>
<td>20-29</td>
<td>73.0</td>
<td>80.0</td>
</tr>
<tr>
<td>30-39</td>
<td>78.4</td>
<td>59.0</td>
</tr>
<tr>
<td>40-49</td>
<td>79.8</td>
<td>53.6</td>
</tr>
<tr>
<td>50-59</td>
<td>79.9</td>
<td>51.5</td>
</tr>
<tr>
<td>60-69</td>
<td>79.8</td>
<td>51.2</td>
</tr>
<tr>
<td>≥ 70</td>
<td>79.6</td>
<td>54.2</td>
</tr>
</tbody>
</table>
### Mean waist-hip ratio (WHR) and percent distribution of WHR, by age and sex, Philippines:2008

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Mean WHR</th>
<th>% Distribution by various levels of WHR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>&lt;0.9</td>
</tr>
<tr>
<td>Males</td>
<td>0.92</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>0.90</td>
<td>51.6</td>
</tr>
<tr>
<td>30-39</td>
<td>0.93</td>
<td>34.0</td>
</tr>
<tr>
<td>40-49</td>
<td>0.93</td>
<td>30.0</td>
</tr>
<tr>
<td>50-59</td>
<td>0.94</td>
<td>28.6</td>
</tr>
<tr>
<td>60-69</td>
<td>0.93</td>
<td>36.4</td>
</tr>
<tr>
<td>≥ 70</td>
<td>0.91</td>
<td>44.6</td>
</tr>
</tbody>
</table>

Females

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Mean WHR</th>
<th>% Distribution by various levels of WHR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>&lt; 0.8</td>
</tr>
<tr>
<td>Females</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>0.86</td>
<td>11.6</td>
</tr>
<tr>
<td>30-39</td>
<td>0.88</td>
<td>5.9</td>
</tr>
<tr>
<td>40-49</td>
<td>0.88</td>
<td>7.1</td>
</tr>
<tr>
<td>50-59</td>
<td>0.87</td>
<td>9.5</td>
</tr>
<tr>
<td>60-69</td>
<td>0.87</td>
<td>12.3</td>
</tr>
<tr>
<td>≥ 70</td>
<td>0.88</td>
<td>13.0</td>
</tr>
</tbody>
</table>
Prevalence trend of high WC and high WHR, by sex

**High WC**
- Males: 2.7, 2.4, 3.1
- Females: 10.7, 17.0, 19.0

**High WHR**
- Males: 7.9, 12.1, 11.1
- Females: 39.5, 54.8, 65.5

Graphs showing the increase in prevalence of high WC and high WHR from 1998 to 2008.
Causation Pathway to NCDs

Predisposing Environment
Globalization
Urbanization
Aging population
Poverty
Low Education
Stress
Culture

Behavioral Risk Factors
Smoking
Alcohol intake
Poor Diet
Inactivity

Intermediate Risk factors
Diabetes
Hypertension
Dyslipidemia
Obesity
Abnormal Lung Function

Chronic NCDs
Heart Disease
Stroke
Cancer
Chronic Lung Disease
Operational Definitions of Smoking Status:

**Current-smokers** are those who are still smoking tobacco or cigarette during the time of survey.

**Ex-smokers** are persons who have smoked but currently do not smoke during the time of survey.

**Non-smokers** are persons who have never smoked cigarettes in their entire life.
Percent distribution of adults 20 years and over, by smoking status, Philippines: 2008

ALL  
- Non-smoker: 54.3%
- Current-smoker: 31.0%
- Ex-smoker: 14.7%

≥ 70  
- Non-smoker: 44.9%
- Current-smoker: 27.1%
- Ex-smoker: 28.0%

60-69  
- Non-smoker: 49.2%
- Current-smoker: 28.2%
- Ex-smoker: 22.6%

50-59  
- Non-smoker: 50.1%
- Current-smoker: 32.6%
- Ex-smoker: 17.3%

40-49  
- Non-smoker: 52.9%
- Current-smoker: 33.0%
- Ex-smoker: 14.1%

30-39  
- Non-smoker: 58.8%
- Current-smoker: 30.2%
- Ex-smoker: 11.0%

20-29  
- Non-smoker: 58.3%
- Current-smoker: 31.1%
- Ex-smoker: 10.6%
Prevalence of cigarette smoking, by sex, Philippines: 2008

- **All**: 31.0%
  - Current Smoker: 14.7%
  - Ex-Smoker: 16.3%
- **Males**: 53.2%
  - Current Smoker: 20.9%
  - Ex-Smoker: 32.3%
- **Females**: 12.5%
  - Current Smoker: 9.5%
  - Ex-Smoker: 3.0%
## Number of cigarette sticks smoked per day, by sex, Philippines: 2008

<table>
<thead>
<tr>
<th>Sex</th>
<th>Commercial cigarettes</th>
<th>Hand-roll</th>
<th>Tobacco</th>
<th>No reported sticks</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-14</td>
<td>15-24</td>
<td>≥ 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>32.7</td>
<td>13.9</td>
<td>2.5</td>
<td>1.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Female</td>
<td>7.6</td>
<td>1.2</td>
<td>0.1</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Overall</td>
<td>19.0</td>
<td>7.0</td>
<td>1.2</td>
<td>0.8</td>
<td>0.6</td>
</tr>
</tbody>
</table>

**Average: 10 sticks per day**
**Operational Definitions of Alcohol Drinking Status:**

**Current-drinkers** are those who consumed 1 or more drinks of any alcoholic beverage in the year preceding the survey.

**Ex-drinkers** are those who did not consume 1 or more alcoholic drinks in the year preceding the survey.

**Non-drinkers** are those who had never consumed any alcoholic drink in his/her lifetime.
Percent distribution of adults 20 years and over, by alcohol drinking status, Philippines: 2008

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Non-drinker</th>
<th>Current-drinker</th>
<th>Ex-drinker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>30.0</td>
<td>26.9</td>
<td>43.1</td>
</tr>
<tr>
<td>≥ 70</td>
<td>44.4</td>
<td>14.0</td>
<td>41.5</td>
</tr>
<tr>
<td>60-69</td>
<td>40.2</td>
<td>19.8</td>
<td>40.0</td>
</tr>
<tr>
<td>50-59</td>
<td>31.9</td>
<td>27.0</td>
<td>41.1</td>
</tr>
<tr>
<td>40-49</td>
<td>28.3</td>
<td>30.7</td>
<td>40.9</td>
</tr>
<tr>
<td>30-39</td>
<td>25.6</td>
<td>30.3</td>
<td>44.0</td>
</tr>
<tr>
<td>20-29</td>
<td>26.6</td>
<td>26.5</td>
<td>46.9</td>
</tr>
</tbody>
</table>
### Types of alcoholic drink consumed, by sex, Philippines: 2008

<table>
<thead>
<tr>
<th>Sex</th>
<th>Prev. current drinker</th>
<th>Type of alcoholic drinks</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Beer</td>
<td>Wines</td>
<td>Spirits</td>
<td>Combination</td>
<td>Reported no type</td>
</tr>
<tr>
<td>Male</td>
<td>47.5</td>
<td>6.8</td>
<td>3.6</td>
<td>14.1</td>
<td>1.9</td>
<td>21.1</td>
</tr>
<tr>
<td>Female</td>
<td>9.8</td>
<td>2.0</td>
<td>1.3</td>
<td>1.5</td>
<td>0.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Overall</td>
<td>26.9</td>
<td>4.2</td>
<td>2.4</td>
<td>7.2</td>
<td>0.9</td>
<td>12.3</td>
</tr>
</tbody>
</table>
Prevalence of alcohol drinking, by sex Philippines: 2008

- All:
  - Current Drinker: 26.9%
  - Past Drinker: 43.1%

- Males:
  - Current Drinker: 42.0%
  - Past Drinker: 47.5%

- Females:
  - Current Drinker: 9.8%
  - Past Drinker: 43.9%
Operational Definitions of Different Domains of Physical Activity (PA):

**Work-related PA** refers to all occupational activities and are usually paid.

**Nonwork-related PA** refers to all non-occupational activities like household chores and are usually unpaid.

**Travel-related PA** refers to all transportational activities like walking, biking/cycling that are needed in traveling from and to places that might be related to work, recreation or leisure.

**Leisure-related PA** refers to all kinds of exercises ranging from low to high intensity and whether regular or not.
## Definition of high levels of physical activity according to domain

<table>
<thead>
<tr>
<th>High work-related PA</th>
<th>High non work-related PA</th>
<th>High travel-related PA</th>
<th>High leisure-related PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours spent per day doing moderate- and/or vigorous-intensity physical activity summed and quartiles computed;</td>
<td>Hours spent in walking, cycling/ biking to places summed and quartiles computed;</td>
<td>Exercise either “Everyday” or “3-5 times a week” at 30-45 minutes.</td>
<td>Highest quartile defined as high active travel.</td>
</tr>
<tr>
<td>Highest quartile classified as engaging in high work and non-work-related physical activity.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Percent distribution of adults 20 years and over, by physical activity, Philippines: 2008

- **Leisure-related PA**: Low 92.7%, High 7.3%
- **Travel-related PA**: Low 94.5%, High 5.5%
- **Nonwork-related PA**: Low 75.4%, High 24.6%
- **Work-related PA**: Low 76.3%, High 23.7%
Percent distribution of adults 20 years and over, by physical activity and by sex, Philippines: 2008

Males

- Leisure-related PA: Low 89.1%, High 10.9%
- Travel-related PA: Low 93.8%, High 6.2%
- Nonwork-related PA: Low 83.0%, High 17.0%
- Work-related PA: Low 76.3%, High 23.7%

Females

- Leisure-related PA: Low 95.7%, High 4.3%
- Travel-related PA: Low 95.2%, High 4.8%
- Nonwork-related PA: Low 70.0%, High 30.0%
- Work-related PA: Low 76.2%, High 23.8%
$P = \text{Proportion of Filipinos with the Risk Factor (RF)}$

$RR = \text{Relative Risk (By how much risk increases)}$

$AR = \text{attributable risk (proportion of a disease caused by RF)}$

$\text{No. of deaths caused by each RF}$
**Estimated no. of deaths from smoking: Philippines, 2008**

SMOKING PREVALENCE = 31.0%

<table>
<thead>
<tr>
<th>Deaths</th>
<th>RR</th>
<th>AR (EF)</th>
<th>Deaths in 2008</th>
<th>Deaths due to smoking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary</td>
<td>2.87</td>
<td>0.37</td>
<td>53,653</td>
<td>19,852</td>
</tr>
<tr>
<td>Stroke/CVD</td>
<td>4.77</td>
<td>0.54</td>
<td>54,044</td>
<td>29,184</td>
</tr>
</tbody>
</table>

1 INTERHEART Study Investigators.  Lancet 2004; 364:937-52

### Estimated number of deaths from CAD and CVD, Philippines: 2008

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>CAD Deaths</th>
<th>CVD Deaths</th>
<th>TOTAL Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>19,852</td>
<td>29,184</td>
<td>49,035</td>
</tr>
<tr>
<td>Hypertension</td>
<td>15,559</td>
<td>25,401</td>
<td>40,960</td>
</tr>
<tr>
<td>Obesity (WHR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male ≥ 1.0</td>
<td>3,067</td>
<td>21,618</td>
<td>37,327</td>
</tr>
<tr>
<td>Female ≥ 0.85</td>
<td>12,642</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>8,799</td>
<td>4,053</td>
<td>12,852</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3,326</td>
<td>6,864</td>
<td>10,190</td>
</tr>
<tr>
<td>Obesity (BMI ≥ 30)</td>
<td>644</td>
<td>2,648</td>
<td>3,292</td>
</tr>
</tbody>
</table>
Males have significantly higher blood pressure than females.

More males (29.1%) were hypertensive than females (22.2%).

The prevalence of hypertension based on single visit BP significantly increased from 22.5% in 2003 to 25.3% in 2008.
Mean FBS was slightly higher among females but the difference was not significant.

No significant difference was noted in the prevalence of high FBS by sex.
SUMMARY

**Blood Lipids**

- Females have significantly higher total-cholesterol and LDL-c levels than males
- Males have significantly low HDL-cholesterol than females
- Males have significantly higher triglyceride level than females
Android Obesity

Android type of obesity either measured by WC or WHR was six times more common among adult females than adult males.

There was an increasing trend in the prevalence of android obesity from 1998 to 2008.
A significant decrease in the proportions of current smokers noted from 2003 to 2008.

- Male smokers were four times greater than their female counterparts.
- A significant decrease in the proportions of current smokers noted from 2003 to 2008.
Alcohol Consumption

- Male drinkers were five times greater than their female counterparts.

- A significant decrease in the proportion of current alcohol drinkers noted from 2003 to 2008
Males were more likely to be physically active in the travel-related and work-related and in leisure-related PA than their female counterpart.

Females were more likely to be physically active in the non-work related activities (mostly household chores) than their male counterparts.
CONCLUSIONS

- Smoking causes the most number of atherosclerotic deaths in the country

- Diabetes, hypertension, high cholesterol, android obesity and smoking are enough to explain majority of CVD and CAD deaths
Formulation of more systematic and sex-specific approach in combating the risk factors to NCDs

Requires preventive intervention focusing the middle age adult (40-59) and elderly (≥ 60 years).

Identify and institute behavioral change modification to reduce morbidity and mortality associated with NCDs.
End of presentation.