Burden of Metabolic Risk Factors of Chronic Diseases - Translating Evidence into Public Health Action: a Case of Thailand

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15 November 2011
Outline

From evidence

- BOD assessment in Thailand
- Burden attributable to risk factors

Towards policy

- Policy use
- Lessons learnt
“If we did not respect evidence, we would have very little leverage for our quest of truth”

(Carl Sargan quoted in Brownson RC et al, 2003)
Introduction of DALY into decision-making in health planning

- 1993: widely known when the World Bank introduced DALY in its report ‘Investing in Health’, as a measure of effectiveness in cost-effectiveness analysis (CEA) for priority setting and thus to construct basic packages.

- During 1999-2003 WHO was committed to routine measurement and reporting of the global and national burdens of disease.
Disability-Adjusted Life Years (DALYs)

Combination of fatal and non-fatal health outcomes

\[ \text{DALYs} = \text{YLLs} + \text{YLDs} \]

- **YLL** = \( dx \times ex \)
- **YLD** = \( I \times \text{DW} \times L \)

Life expectancy
Burden attributable to risk factors

Basic Comparative Risk Assessment (CRA) framework

Risk factor levels
- current distribution
- Counterfactual distribution(s)

Risk factor-disease relationships
- risk accumulation
- risk reversal

Disease burden

Attributable burden
Avoidable burden

Thai Burden of Disease study (2009)

1. Disease categories
   1. 3 major groups
   2. 20 categories
   3. 110 specific conditions

2. Risk selection
   14 risk factors

3. Disability weights
   • mostly GBD
   • Dutch weights where more appropriate
   • Estimates

4. Discounting factors
   3%, similar to GBD

5. Age weighting
   No age weighting
Essential data sources

- Vital Registration (VR)
- Verbal Autopsy (VA)
- National Health Examination Survey (NHES)
Past and present burden of disease and injury (DALYs per 1,000 population)

In 2009, disease burden due to NCD accounted for 7.4 mil DALYs (74 % of total burden).
Proportion of total

- Cardiovascular diseases: 14%
- Cancer: 13%
- Mental disorders: 12%
- Infectious diseases: 8%
- Unintentional injuries: 11%
- Diabetes: 6%
- Other: 18%
- Digestive disorders: 4%
- Musculo-skeletal diseases: 4%
- Chronic respiratory diseases: 4%
- Sense disorders: 6%

Proportion by sex

<table>
<thead>
<tr>
<th>Disease Category</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>Cancer</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>77%</td>
<td>23%</td>
</tr>
<tr>
<td>Unintentional injuries</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>Infectious diseases</td>
<td>37%</td>
<td>63%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>41%</td>
<td>59%</td>
</tr>
<tr>
<td>Sense disorders</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>Chronic respiratory diseases</td>
<td>38%</td>
<td>62%</td>
</tr>
<tr>
<td>Musculo-skeletal diseases</td>
<td>67%</td>
<td>33%</td>
</tr>
<tr>
<td>Digestive disorders</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Burden (daly) by broad disease groups

**Proportion due to fatal and non-fatal outcome**

<table>
<thead>
<tr>
<th>Disease Group</th>
<th>YLL</th>
<th>YLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>84%</td>
<td>16%</td>
</tr>
<tr>
<td>Cancer</td>
<td>97%</td>
<td>3%</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>95%</td>
<td>5%</td>
</tr>
<tr>
<td>Unintentional injuries</td>
<td>87%</td>
<td>13%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>Sense disorders</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Chronic respiratory diseases</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>94%</td>
<td>6%</td>
</tr>
<tr>
<td>Musculo-skeletal diseases</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>Digestive disorders</td>
<td>86%</td>
<td>14%</td>
</tr>
<tr>
<td>Others</td>
<td>59%</td>
<td>41%</td>
</tr>
</tbody>
</table>
Burden attributable to risk factors
% of total DALYs loss

High blood pressure, cholesterol, BMI about 14%
These 3 risk factors:
12% of DALYs lost in men
17% of DALYs lost in Women
Some metabolic diseases in population 15+ years

NHES III (2003-4)

Prevalence 6.9%
- Known 43.4%
- Controlled 12.2%

Prevalence 22.0%
- Known 28.6%
- Controlled 8.6%

Prevalence 15.5%
- Known 12.9%
- Controlled 6.2%

NHES IV (2008-9)

Prevalence 6.9%
- Known 68.8%
- Controlled 28.5%

Prevalence 21.4%
- Known 49.7%
- Controlled 20.9%

Prevalence 19.4%
- Known 27.3%
- Controlled 14.8%

Source: Bureau of Policy and Strategy, MOPH
Cabinet approval in March 2011 and endorsed the national committee

### Thailand Healthy Lifestyle Strategic Plan 2011-2020

#### Ultimate goal
People, community, society and country have immunity and capacity to prevent health threat from lifestyle diseases.

#### Main goals on 3 major areas

<table>
<thead>
<tr>
<th>5 Important lifestyle diseases</th>
<th>5 Aspects</th>
<th>3 Components (Sufficiently healthy lifestyle)</th>
</tr>
</thead>
</table>

#### Strategy

<table>
<thead>
<tr>
<th>Healthy public policy</th>
<th>Social mobilization &amp; public communication</th>
<th>Community building</th>
<th>Surveillance &amp; care system</th>
<th>Capacity building</th>
</tr>
</thead>
</table>

1. Involvement of stakeholders / awareness and lifestyle management / capacity building of surveillance, prevention & control / reduce sweet, salt, fat, smoke, alcohol
2. Decrease overweight, obesity / increase exercise / decrease cholesterol / decrease metabolic syndrome / stress management / decrease disease complication
3. Decrease mortality and slow down prevalence from lifestyle disease / decrease health expenditure

From Manosunthorn, 2011
## Cost of illness (2009)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cost (Million Baht)</th>
<th>(% GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>55,605</td>
<td>0.61%</td>
</tr>
<tr>
<td>CVD</td>
<td>49,933</td>
<td>0.55%</td>
</tr>
<tr>
<td>DM</td>
<td>32,444</td>
<td>0.36%</td>
</tr>
<tr>
<td>COPD</td>
<td>12,735</td>
<td>0.14%</td>
</tr>
<tr>
<td>Total</td>
<td>150,717</td>
<td>1.67%</td>
</tr>
</tbody>
</table>

Note: preliminary result
Lessons learnt
1. Methodology

1.1 Inadequacy of data

Challenges:

- VR - Incompleteness
  - Poor quality of COD

- Unavailability of a number of morbidity and disability data

- Inconsistency of data sources over time

Acheivements:

- Direct technique estimation of completeness were applied by using time series from the Survey of Population Change

- VA and medical record investigation were conducted to verify COD from vital registration

- Use of regional/global estimates from literature review and GBD estimates

- Consensus meeting with disease experts

- Most datasets maintain consistency
1. Methodology (cont.)

1.2 Adaptation on methods

Challenges:
Classification of disease was not particular fit with tropical diseases
Unavailability of DW

Achievements:
Leptospirosis was added but there was no disability weight values in the GBD
Estimation was derived from the close matched conditions
2. Institutional capacity

2.1 Generating BOD evidence

Challenges:

- Fragmentation of mortality and morbidity data sources
- Time consuming to collate datasets

Achievements:

- Capacity of the Thai Working Group on BOD was gradually institutionalized
- Oversight committee provides continued and invaluable supports
- Comprehensive assessment of demographic, epidemiologic, and health services data on mortality and morbidity
- Trust based networking with data owners, data users, and disease experts
- Results have been further utilized in cost-effectiveness assessment
- National financial commitments and support
- Technical supports from WHO and international experts are invaluable.
2. Institutional capacity

2.2 Translation BOD into policy decision

Challenges:
- Data quality
- Complex methodology
- Timeliness
- Other important dimensions to resource allocation

Acheivements:
- BOD were referenced during national policy formulation process and policy documents, e.g. the Thai Health Promotion Foundation master plan and its 2006 annual report
- Results were applied in prioritizing health investment fostering resources in primary preventions of chronic NCD, in particular tobacco and alcohol;
- Awareness and increased investments in road safety and HIV preventions.
Conclusions

Policy orientation

Basic information for policy and plan

Monitoring health system

Shifting of resources

Resource allocation
Conclusions

We have evidence and we have a plan(s) but...

- Short or long time effect

Key enhancing factors:

1. Surveillance and monitoring information: coverage, effectiveness, etc.
2. Multi-sectoral approach & avoid duplication
3. Political commitment
4. Strengthen relevant research capacity: policy research, R2R (Routine to Research)
Acknowledgements

• The Thaihealth Promotion Foundation for the funding of the national BOD.
• Dr Theo Vos and Stephen Begg from Australia and Prof. Majid Ezzati who provided technical guidance during 2002-3.
• Dr Chanpen Choprapawan and Dr Yawarat Porapakham (SPICE project) for sharing the VA data

Thank you

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