Current Analysis of Framingham Risk Score among Rural Community in Malaysia: From Gender and Age Perspective


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Introduction

- Cardiovascular disease (CVD) can be silent in its earlier stage.  
  Angus et. al (2005)

- World Health Organization (WHO) estimated about 17 million people globally die of CVD each year. WHO (2002)

- Heart and blood vessels disease are significant cause of death and disability in the older adults. As the effect of ageing, blood vessels lose elasticity and become more rigid and narrow. Myers et. al (2002)
Rural population is thought to be at low risk for CVD. However, with economic development, rural people become urbanized.

Prevalence of CVRf, thus the prevalence of CVD, stroke and heart attack also.

Nawawi et. al (2002)
Percentage of Deaths due to CVD in MOH Hospitals

(MOH 2007, 2011)
MAJOR RISK FACTORS OF CVD

- Abnormal plasma lipid level (LDL-c, HDL-c)
- Hypertension
- Smoking
- Diabetes and proteinuria
- History of vascular disease
- Age and gender
- Family history of premature CHD

(Verschuren et al., 1995; Thomas et al., 2002; Greenland et al.; 2003, O'Meara et al., 2004; Richard FD, 2007)
The equations were derived from large prospective cohort studies to estimate the risk of having a CHD event over 5 to 10 years (Assmann et al. 2002).

Parameters needed:

- Age
- Gender
- Total Cholesterol
- High Density Lipoprotein
- Smoking Status
- Systolic Blood Pressure
- Current Medication on anti-hypertensive drugs
Framingham Risk Score

Advantages

- Provide realistic picture about patient's risk for CVD in 10 years (Moy et. al 2008)
- Includes the important risk factors in calculation (Backer et. al 2003; Conroy et. al 2003)
- More cost effective in guiding CHD treatment decisions (Murray et. al 2003)
- Able to differentiate among those who will have a CVD event and those who are not at risk for CVD (D'Agostino et. al 2001)

Disadvantages

- Not suitable for respondents <30 years old or >65 years old, Japanese American men, Hispanic men and Native-American Women (Grundy et. al 2001)
As data were lacking in Framingham Risk Score in the rural community, this study will gave invaluable insight into the scope.
Methodology

- A cross sectional study.
- Conducted in Raub, Malaysia.
- Between July 2010 and June 2011.
- Respondents were subject from research conducted in 1993 or 1998 by UKM.
- FRS was calculated using the Adult Treatment Panel III online risk estimator.
Blood Pressure Measurement
- Measurement was taken twice and an average of readings was recorded.
  (Omron Automatic Blood Pressure Monitor, China)

Questionnaire
- Sociodemographic
- Smoking Status
- History of anti-hypertensive medication

Fasting Serum Lipid
- Total Cholesterol and High Density Lipoprotein
  (Cobas Integra; Roche Diagnostics, Switzerland)
Risk Assessment Tool for Estimating 10-year Risk of Developing Hard CHD (Myocardial Infarction and Coronary Death)

The risk assessment tool below uses recent data from the Framingham Heart Study to estimate 10-year risk for “hard” coronary heart disease outcomes (myocardial infarction and coronary death). This tool is designed to estimate risk in adults aged 20 and older who do not have heart disease or diabetes. Use the calculator below to estimate 10-year risk.

Age: ___ years

Gender:
- Female
- Male

Total Cholesterol: ___ mg/dL

HDL Cholesterol: ___ mg/dL

Smoker:
- No
- Yes

Systolic Blood Pressure: ___ mm/Hg

Currently on any medication to treat high blood pressure:
- No
- Yes

[Calculate 10-Year Risk]
## Risk score results:

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>55</td>
</tr>
<tr>
<td>Gender</td>
<td>male</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>132 mg/dL</td>
</tr>
<tr>
<td>HDL Cholesterol</td>
<td>77 mg/dL</td>
</tr>
<tr>
<td>Smoker</td>
<td>Yes</td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>128 mm/Hg</td>
</tr>
<tr>
<td>On medication for HBP</td>
<td>No</td>
</tr>
</tbody>
</table>

**Risk Score**: 5%

*The risk score shown was derived on the basis of an equation. Other NCEP materials, such as ATP III print products, use a point-based system to calculate a risk score that approximates the equation-based one.*

To interpret the risk score and for specific information about CHD risk assessment as part of detection, evaluation, and treatment of high blood cholesterol, see [ATP III Executive Summary](#) and [ATP III At-a-Glance](#).
Classification of Risk

- High Risk: >20%
- Moderate Risk: 10% to 20%
- Low Risk: <10%

Moy et. al (2008)
441 rural, community dwellers were participated.

Mean age 58.5 ± 10.1 years old.

41.7% (n=184) were males.

40.8% (n=180) were at least 60 years old.

11.8% (n=52) were smokers.

29.5% were on anti-hypertensive drugs.
Percentage of High, Moderate and Low Risk Group for CVD

<table>
<thead>
<tr>
<th>Group</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (FRS &lt;10%)</td>
<td>62.4%</td>
</tr>
<tr>
<td>Moderate (FRS 10%-20%)</td>
<td>22.2%</td>
</tr>
<tr>
<td>High (FRS &gt;20%)</td>
<td>15.4%</td>
</tr>
</tbody>
</table>

*Data were expressed in percentage*
Data were expressed in percentage. (p=0.000)
Percentage of Age Groups in the High Risk Group (n=68)

- Less than 60 Years Old: 20.6%
- At least 60 years old: 79.4%

Data were expressed in percentage. (p=0.000)
65% of the CVD hospitalizations in 1996 were in elders and about 84% of the deaths from CVD occurred in this age group (American Heart Association, 1999).

Besides that, 50% of patients that diagnosed as having myocardial infarction and more than 80% of people who died of coronary heart disease (CHD) are in the ages of 65 years or older (American Heart Association 2007).
Global risk assessment is important in the overall management of patients to prevent CHD (Nawawi et. al 2001).

Population data demonstrated that having multiple cardiovascular risk factors increases the incidence of cardiac events (Yusuf et. al 2004).

The prevention strategies actually should be targeted to younger age group, a time in which CVD risk factors and atherosclerotic plaques are in the early stages of development, and cardioprotective practices can be established (Hayman et. al 2004).
Elderly and male gender were significantly represented in Framingham’s high risk group among rural community.

Earlier and intensive preventive measures, targeted to these groups are crucial to prevent the progression of CVD.
Since the theme for the conference is…

TRANSLATING EVIDENCE INTO PUBLIC HEALTH ACTION
The Health Action Process Approach

pre-intentional  intentional  actional

Risk & Resource Communication

Strategic Planning

Relapse Prevention

Schwarzer (2005)
Thank you...

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