

# Assessment of cardiovascular risk in Myanmar

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## Abstract

In the past few decades, noncommunicable diseases (NCDs) have emerged as a major public health problem in Myanmar, due to demographic, epidemiological and socioeconomic transition. As part of the plan to develop a community-based intervention through basic health-care professionals, a study was conducted to assess the baseline 10-year risk for fatal and non-fatal cardiovascular disease events using the World Health Organization/International Society of Hypertension (WHO/ISH) risk prediction charts. The study was conducted in four different townships encompassing a total of 611 persons: 152 from Tharkayta township (Delta region, lower Myanmar), Yangon; 160 from Leiway township (Central Myanmar), Nay Pyi Taw; 145 from Mahar Aung Myay (Upper Myanmar), Mandalay; and 154 from Singu (hilly region), Pyin Oo Lwin. The survey found that 18.8% were current smokers, 45.8% were obese, 38.6 had high cholesterol levels, 24.9% had high triglyceride levels and 10.3% had diabetes. Over half of the respondents (57%) were hypertensive. While metabolic abnormalities (obesity, cholesterol and sugar levels) were higher among women, the prevalence of smoking and hypertension was higher among men. Overall, the prevalence of these risk factors was high. From the data collected, 10-year cardiovascular risk was calculated using the WHO/ISH risk prediction charts. About half of the population was at low risk. Moderate (10% to <20%) risk was found in 20.6%, high risk (20% to <30%) in 11.5% and very high risk (30% to <40%) in 9.5% of the study population. Despite differences in the individual risk factors, the risk profile of the men and women was similar. Pilot implementation of the WHO Package of Essential NCD interventions was started in two townships in 2012. Many initiatives have taken place in Myanmar in the recent past, but they need to be expanded and scaled up to have an impact at the national level.

## Introduction

The prevalence of hypertension is rising in the South-East Asia Region, including Myanmar. It is a leading risk factor for mortality, and claims nearly 1.5 million lives each year in the Region.<sup>1</sup> High blood pressure can affect anyone, regardless of age, sex, race, ethnicity and financial status.

In the past few decades, noncommunicable diseases (NCDs) have emerged as a major public health problem in Myanmar due to demographic, epidemiological and socioeconomic transition. One of the major challenges to the prevention and control of NCDs is the paucity of information on the risk factors for NCDs. In Myanmar, the rising trend in morbidity and mortality due to NCDs can be estimated from the Health Management Information System (HMIS). However, information on the prevalence of risk factors leading to these diseases including that of hypertension is very limited and cannot be extracted from the HMIS.

The National Health Plan (2011–2016) of Myanmar accords high priority to the prevention and control of NCDs. The Ministry of Health is promoting collaborative and multisectoral actions that involve integrated epidemiological surveillance and comprehensive environmental, policy and programme interventions for major risk factors. Equitable and cost-effective management of major

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NCDs, coupled with optimal utilization of the existing capacity of health systems, need to be promoted. A Cardiovascular Disease Project was established in Myanmar in 1981, which runs hypertension clinics in 43 townships in Yangon division. The project is also expanding hypertension clinics to the districts to increase the accessibility to health-care services for hypertension. As a part of the plan to develop a community-based intervention through basic health-care professionals, a study was conducted to assess the baseline 10-year risk for fatal and non-fatal cardiovascular disease (CVD) events using the World Health Organization/International Society of Hypertension (WHO/ISH) risk prediction charts.

## Methods

The Cardiovascular Disease Project in Myanmar conducted a community-based survey in four different townships in 2010 to assess the CVD risk factors including hypertension, and the 10-year risk of fatal or non-fatal CVD. The study population comprised 611 persons: 152 from Tharkayta township (Delta region, lower Myanmar), Yangon; 160 from Leiway township (Central Myanmar), Nay Pyi Taw; 145 from Mahar Aung Myay (Upper Myanmar), Mandalay; and 154 from Singu (hilly region), Pyin Oo Lwin.

Adult subjects above 25 years of age were enrolled by trained community health workers within their allotted area of work. Standard measurement procedures were followed for anthropometry and blood pressure. Blood was collected and tested for random sugar, total cholesterol and triglyceride levels using point-of-care diagnostic strips by Accutrend Plus (<http://www.cobas-roche.co.uk/site/accutrendplus.aspx>). This information was used to grade individuals on their cardiovascular risk using the WHO/ISH risk prediction charts.<sup>2</sup> Using the chart, the health worker identified people at high risk and referred them for appropriate treatment to the next level of care.

The WHO/ISH charts have been developed from the best available mortality and risk factor data of low- and middle-income country populations. The charts have been developed using a modelling approach. In brief, a set of individual-level CVD risk factor profiles (age, sex, systolic blood pressure, total cholesterol, and the presence or absence of type-2 diabetes) have been generated using information on the population distribution of these risk factors from the WHO Comparative Risk Assessment study. These risk factor profiles have then been combined with information on the relative risk of each risk factor, along with the population-level estimate of absolute risk. The risks of non-fatal and fatal myocardial infarction and non-fatal and fatal stroke have been modelled and combined to predict the individual risk of coronary heart disease and cerebrovascular disease. All WHO regions have been divided into epidemiological subgroups based on the CVD epidemiology. Myanmar falls under the category SEAR-D.<sup>a,2</sup>

The results are presented as mean and prevalence using descriptive statistics.

## Results

The mean age of the 611 study subjects was 52 years (range 27–88 years) with 58% of the subjects in the age group of 40–59 years. The majority (452; 74%) of the subjects were women who were on an average four years younger than the men.

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<sup>a</sup> Countries with high child and high adult mortality in the South-East Asia Region

In the survey, 18.8% were current smokers. Other biological risk factors were also assessed and obesity was found in 45.8%, high total cholesterol level in 38.6%, high triglyceride level in 24.9% and diabetes in 10.3%. According to the data on measured blood pressure, over half of the respondents (57%) were hypertensive (Table 1). While metabolic abnormalities (obesity, cholesterol and sugar levels) were higher among women, the prevalence of smoking and hypertension was higher among men. Overall, the prevalence of these risk factors was high.

**Table 1. Levels of risk factors for cardiovascular diseases (CVD) in four selected townships, Myanmar, 2010<sup>a</sup>**

	Men (N=159)	Women (N=452)	Both sexes (N=611)
Current smoking	46.5	9.1	18.8
Body mass index (BMI) >25	33.3	50.2	45.8
High total cholesterol level (190 mg/dl and above)	28.3	42.3	38.6
High triglyceride level (180 mg/dl and above)	22.6	25.7	24.9
<b>Hypertension</b>	<b>64.2</b>	<b>54.9</b>	<b>57.3</b>
Isolated diastolic hypertension (DBP ≥90 mmHg)	3.1	4.2	3.9
Isolated systolic hypertension (SBP ≥140 mmHg)	21.4	24.1	23.4
Both systolic and diastolic hypertension (SBP ≥140 mmHg, DBP ≥90 mmHg)	39.6	26.5	30.0
Diabetes mellitus	6.3	11.7	10.3

<sup>a</sup>All values are percentages.

From the data collected, the 10-year cardiovascular risk was calculated using the WHO/ISH risk prediction chart for SEAR-D. About half of the population was at low risk. Moderate (10% to <20) risk was found in 20.6%, high risk (20% to <30%) in 11.5% and very high risk (30% to <40%) in 9.5% of the study population (Table 2). Despite differences in the individual risk factors, the risk profile of the men and women was similar.

**Table 2. Distribution of 10-year risk for cardiovascular events by sex in four selected townships, Myanmar, 2010<sup>a</sup>**

	Men (N=159)	Women (N=452)	Both sexes (N=611)
Low (<10%)	50.3	52.2	51.7
Moderate (10% to <20%)	17.6	21.7	20.6
High (20% to <30%)	14.4	10.4	11.5
Very high (30% to <40%)	11.3	8.8	9.5
Extremely high (40% and above)	6.3	6.9	6.7

\* All values are percentages.

## Discussion

This study shows that basic health-care professionals can be trained to assess cardiovascular risk using the WHO/ISH charts and that the population studied had high levels of CVD risk. The study was aimed at testing a strategy and not in generating a representative sample for estimation of population risk, as is done under surveillance. The skewed sample structure, with three fourths of the study population being women, is due to the greater availability of women at home.

Other studies including the national NCD risk factor survey in 2009 have confirmed the high prevalence of risk factors in the population of Myanmar.<sup>3</sup> A cross-sectional survey conducted in three urban townships of Yangon city (Sanchaung, Latha and Pabedan) and one rural township of Hmawbi showed that CVD was a health problem in both urban and rural communities. Coronary heart disease was found to be more prevalent in the urban townships than in the rural Hmawbi township, but hypertension and rheumatic heart disease were more prevalent in the rural township of Hmawbi.<sup>4</sup> Obesity was not found to be a risk factor in the study population, but smoking was. According to the NCD risk factor survey in Myanmar in 2009, only 37% of the men and 45% of women diagnosed were taking antihypertensive drugs prescribed by health workers.<sup>3</sup> These findings point to the urgent need to address NCDs as a major public health problem by strengthening national policies and health systems.

The threshold for implementing high-risk strategies, particularly drug treatment, will depend on the economic, political and social realities of each country. For example, very low-income countries may decide to implement high-risk strategies for a 10-year risk of CVD at a threshold of 40%. Other countries with additional resources may lower it to 30%. As the threshold is lowered, the health benefits will increase and costs will escalate. The level of risk at which drug treatment should be started when managing patients within the public health sector is a policy decision that has to be made by health authorities and experts at the national level. The WHO/ISH risk prediction charts facilitate the operationalization of such policy decisions.

WHO is providing technical support to ministries of health to develop and adapt clinical protocols for integration of NCD in primary care in accordance with evidence-based guidelines. A minimum set of NCD interventions should be accessible for people at the primary care level before any NCD screening programme is initiated, because it does not make sense to detect cases if care cannot be assured. These are defined under the WHO Package of Essential Interventions for NCDs (PEN).<sup>5</sup>

In Myanmar, the PEN intervention was implemented in Hlegu and Hmawbi townships with technical support from WHO. In each township, three areas were selected for implementation. Basic health staff and medical officers were trained in 2012.<sup>6</sup> The project is currently being evaluated and it is planned to gradually expand the services to cover the whole country, based on the lessons learnt during the current implementation.

High blood pressure is a silent killer with no overt signs and symptoms. Many people in developing countries including Myanmar remain undiagnosed, although many of them could be treated with low-cost medications, which would significantly reduce the risk of death and disability from heart disease and stroke. Inadequate treatment and poor control of blood pressure lead to complications, due to which people spend more on long-term and lifelong health care, and are finally pushed into poverty. It is thus important to educate people about the need for regular check-ups for blood pressure so that hypertension can be diagnosed early. Paucity of awareness of the need for early detection of hypertension and irregular medication are the major causes of morbidity and complications of hypertension. Thus, counselling to ensure adherence to treatment should be

provided at each clinic visit. Health education on non-pharmacological measures including lifestyle modifications is as important as adherence to antihypertensive medications.

In conclusion, it is important to address the high levels of cardiovascular risk in Myanmar using an integrated approach of healthy public policies that target the major risk factors of NCDs (tobacco use, salt intake, etc.), strengthen health systems through the primary health-care approach and conduct awareness-generation activities. Many initiatives have taken place in Myanmar in the recent past; these need to be expanded and scaled up to make an impact at the national level.

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