Non-Communicable Diseases in Urban Communities

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The World Health Organization reported the rising trends of global non-communicable diseases (NCD). These NCDs include cardiovascular diseases (CVD), cancer, chronic obstructive lung diseases and diabetes. In 2005, it was estimated that 35 million deaths worldwide were attributable to this group of diseases and the projected number of deaths will increase to over 41 million in 2015. The concern is that the people affected most are in the low and middle income countries.[1]

Similar to other low and middle income countries, Thailand has been in the epidemiologic transition in the past few decades. There has been a shift in diseases burden from the predominance of infectious diseases to non-communicable chronic diseases.[2] These changes have been implicated to the changes in environmental determinants rather than genetic factors and maybe in part due to the ageing population. The changes have been relatively similar across the globe due to globalization. In addition, more rapid changes have been observed in urban areas where modern technology, culture and economic growth have started. All these factors contribute to the changes of lifestyles, in particular eating habits and physical activity patterns and time spent. The life styles of most people in traditional society were more physically active and relatively under-nourished, while those of the present time are towards inactive and over-nourished.

Change in pattern of diseases and risk factors

National health statistics show that the leading burden of diseases in the Thai population has been shifting to non-communicable diseases. The Bureau of Health Policy and Strategy (BHPS), Ministry of Public Health (MOPH), and International Health and Policy Planning (IHPP) reported that the disease burden measured as disability adjusted life year, -one DALYs lost is defined as one year of healthy life loss due to premature death and disability. The loss in the Thai population due to infectious diseases, maternal and perinatal and nutritional conditions decreased from 2.6 million DALYs in 1999 to 2.1 million DALYs in 2004. Conversely, the DALYs lost from NCDs increased from 5.6 to 6.5 million DALYs during the same period. In total, the proportion of DALYs lost due to NCD increased from 58.9% to 65.6%.[3]

The number of inpatient admissions reported from the BHPS, MOPH shows the number of stroke inpatients continuously increased from 69.5 cases in 1996 to 174.9 cases per 100,000 populations in 2006. Accordingly, from 1999 to 2004, the DALYs lost due to stroke increased from 2.7 million in 1999 to 3.4 million in 2004. At the same period, DALYs lost due to ischemic heart diseases increased from 2.7 million to 3.2 million. For cancer, - liver cancer alone, the DALYs increased from 3.7 million in 1999 to 4.0 million. Chronic obstructive pulmonary diseases contributed to a total of 2.5 million DALYs in 1999 and increased to 3.1 million DALYs in 2004. DALYS lost attributable to diabetes increased from 4.4 million in 1999 to 4.5 million in 2004.[3]

NCD risk factors

Among several risk factors related to DALYs lost, alcohol consumption is the number one risk factor that contributed to a total of 8.1% of all DALYS lost in 2004. It increased from 486,000 in 1999 to 801,000 DALYs in 2004. Tobacco is a risk factor of several chronic diseases that contribute to the leading causes of burden of diseases with an estimate of 5.8% of DALYs lost due to tobacco use in 2004 (increased from 549,000 in 1999 to 570,000 in 2004). High blood pressure ranked the fourth contributor to the leading cause of DALYs lost (5.5% of total DALYs) which increased from 475,000 DALYs lost in 1999 to 547,000 in 2004. Obesity is the sixth leading risk factor that contributed 3.9% of total DALYs lost in 2004. (370,000 DALYs lost in 2004). High blood cholesterol ranked the seventh cause of DALYs lost (2.4% total DALYs) which increased from 215,000 in 1999 to 220,000 DALYs in 2004. A low consumption of vegetable and fruits were attributable to 1.8% of total DALYs lost. Physical inactivity caused 1.3% of total DALYs lost which increased from 110,000 in 1999 to 129,000 DALYs lost in 2004. Although the data did not show the distribution of DALYs lost by urban/rural, given the high prevalence

TABLE 1. Prevalence of common chronic disease risk factors in Thai adults age ≥ 15 by urban/rural, National Health Examination Surver Thailand, 2004.

Factors	Male		Female	
	Urban	Rural	Urban	Rural
Obesity (BMI >25 kg/m^2) (%)	31.0	19.8	37.7	33.3
Diabetes (%)	8.6	5.7	7.8	7.1
Hypertension (%)	27.1	22.1	22.4	20.4
High total cholesterol (≥240 mg/dL) (%)	19.7	11.8	22.3	15.2
Smoking (%)	38.6	48.3	2.8	2.2
Physical inactivity (%)	26.1	18.9	26.3	23.5

of several risk factors it is expected the high proportion of diseases burden were in urban areas.

Cardiovascular risk factors in urban/rural area

The National Health Examination Survey (NHES) 2004 shows a substantial discrepancy of cardiovascular risk factors in urban and rural areas. Table 1 shows the prevalence of common CVD risk factors such as obesity, diabetes, hypertension, high blood cholesterol, smoking and physical inactivity in Thai adults aged ≥15 yrs in 2004.[4,5,6] All the factors except smoking were more common in urban than in rural areas.[7] The proportions of individuals with risk factors are higher in urban areas compared to rural areas, although the prevalence in rural areas are increasing and the difference between urban/rural areas is likely to become smaller in the near future. Of note, the urban areas here are defined as municipality areas and they have been expanding, as a lot of areas outside the municipalities in the past have now become municipal areas.

Overall, Thailand is home to approximately 10 million of overweight and 17 million of obese adults. Three million individuals have diabetes and ten million individuals with hypertension.

Link between determinants and NCDs

Non-communicable diseases, are also named as diseases of comfort or diseases of affluence which refers to the lifestyles of eating well but being physically inactive. The mechanisms of development of the diseases related to changes in life styles are mainly due to the technological advances, trades and human desires of comfort. Human being in all societies are likely to prefer varied tastier food in particular the sweet and fatty taste.[8] Interaction between income and preference is another factor as additional income is being used to purchase higher calorie food.[9] For dietary intake, the percentage of energy source from protein and fat is increasing. Data from the Department of Nutrition, MOPH reported that the trend of energy source by food groups in 1960 and 2003 indicated the decreasing proportion of energy derived from carbohydrates of 78.8% to 62% and energy from fat increasing from 8.9% in 1960 to 23.9% in 2003. An increase has also been observed for protein from 10.8 to 13.9% during the same period.[10] Finally, the changes in physical activity patterns such as in the mode of traveling, for example, human live in the world of rapid progress from traveling using animals to airplane. The higher dietary consumption, but lower expenditures of energy have clearly contributed to the increased energy imbalance.

Intervention and recommendation

Strategies to prevent and control NCDs should target to reduce the exposure to risk factors in the population and high-risk individuals. The national survey shows that about 60% of the population have at least one risk factor and about 8% have three or more risk factors.[11] It is evident that the majority of the population with moderate risk contributes the higher proportions of the disease burden.[1] Although, urban areas have higher rates of risk factors and disease burden, the increasing prevalence in rural areas is also of concern. Intervention is needed to cover the population in a large scale of both urban and rural areas with appropriate programs and continuity. For this population, the interventions need to aim at the policy and environmental changes related to health behavior in diet, physical activity and tobacco use control. There is an exemplary case of effective tobacco control measures to reduce tobacco consumption in Thailand. This includes legislation on taxation, pricing, advertisement ban, prohibition of smoking in public places, and age limit for purchase of tobacco, however the problem is still not over, and more stringent measures need to be continued to protect the vulnerable groups. For healthy food promotion, the strategic intervention programs are more complicated. Similar approaches to tobacco control are advocated such as taxation of sugar added in beverages, taxation of edible oil, ban of advertisement or stall the expansion of junk foods while promoting of increased vegetable and fruit consumption.[12] Intervention on healthy diet and physical activity has been proven to be effective in the prevention of the diseases, although effective intervention for implementation of such activities still has to be improved. Additional intervention measures on diet and physical activity to reduce NCDs include supportive environment, effective public education, community intervention, school and workplace intervention and screening and clinical treatment for high-risk individuals. It is evident that interventions that incorporate with multi-component programs with local context are more promising.[13,14]

Since urbanization is expanding and unavoidable, a healthy urbanization should be advocated. The process of modernization should be integrated with effective public policy and health promotion programs to create a healthy society with minimum unnecessary disability and premature death in the future.

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