

Integrating Poverty and Gender into Health Programmes

A Sourcebook for Health Professionals



Module on Noncommunicable Diseases

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ABBREVIATIONS

ADL	Activities of daily living
AIDS	Acquired immunodeficiency syndrome
BMI	Body Mass Index
CVD	Cardiovascular disease
DALY	Disability-adjusted life year
FCTC	Framework Convention on Tobacco Control
GDP	Gross domestic product
HIV	Human immunodeficiency virus
IADL	Instrumental activities of daily living
IEC	Information, education and communication
kcal	Kilocalories
LBW	Low birth weight
MDG	Millennium Development Goal
NCD	Noncommunicable disease
NGO	Nongovernmental organization
PRSP	Poverty reduction strategy paper
WHO	World Health Organization

Note: In this publication, \$ means US dollar.

PREFACE

Over the past two to three decades, our understanding of poverty has broadened from a narrow focus on income and consumption to a multidimensional notion of education, health, social and political participation, personal security and freedom, and environmental quality.¹ Thus, poverty encompasses not just low income, but lack of access to services, resources and skills; vulnerability; insecurity; and voicelessness and powerlessness. Multidimensional poverty is a determinant of health risks, health seeking behaviour, health care access and health outcomes.

As analyses of health outcomes become more refined, it is increasingly apparent that the impressive gains in health in recent decades are distributed unevenly. Aggregate indicators, whether at the global, regional or national level, often mask striking variations in health outcomes between men and women and rich and poor, across and within countries.

An estimated 70% of the world's poor are women.² Similarly, in the Western Pacific Region, poverty often wears a woman's face. Indicators of human poverty, including health indicators, often reflect severe gender-based disparities. In this way, gender inequality is a significant determinant of health outcomes in the Region, with women and girls often at a severe societal disadvantage.

Although poverty and gender significantly influence health and socioeconomic development, health professionals are not always adequately prepared to address such issues in their work. This publication aims to improve the awareness, knowledge and skills of health professionals in the Region on poverty and gender concerns.

The set of modules that comprise this Sourcebook are intended for use in pre-service and in-service training of health professionals. This publication also is expected to be of use to health policy-makers and programme managers as a reference document, or in conjunction with in-service training.

All modules in the series are linked, though each one can be used on a stand-alone basis if required. Two foundational modules establish the conceptual framework for the analysis of poverty and gender issues in health. Each of the other modules is intended for use in conjunction with these two foundational modules. The Sourcebook also contains a module on curricular integration to support health professional educational institutions in integrating poverty and gender concerns into existing curricula.

All modules in the Sourcebook are designed for use through participatory learning methods that involve the learner taking advantage of his or her experience and knowledge. Each module contains facilitators' notes and suggested exercises to assist in this process.

It is hoped that the Sourcebook will prove useful in bringing greater attention to poverty and gender concerns in the design, implementation, and monitoring and evaluation of health policies, programmes and interventions.

Introduction



Introduction

Noncommunicable diseases (NCDs) are rising at an alarming rate in developing countries. NCDs are not, however, among the Millennium Development Goals (MDGs) because they tend to be characterized as diseases of affluence. Such beliefs obscure the need for the urgent action to stem the rising tide of NCDs in low-income settings. Poor individuals who do not have the resources to pursue healthy choices easily, or to access effective health services for diagnosis and treatment for NCDs, are particularly vulnerable. Similarly, gender and other forms of social exclusion determine NCD risks, and thus their prevention and control. The knowledge and tools to reduce the burden of disease exist. Mobilizing support for the prevention and control of NCDs in developing countries will improve the health of millions, thereby contributing to poverty reduction.

This module is designed to improve the awareness, knowledge and skills of health professionals regarding poverty and gender concerns in the

prevention, treatment and control of NCDs. It is divided into six sections:

- **Section 1** defines NCDs and describes their distribution globally and within the Western Pacific Region.
- **Section 2** examines **WHAT** the links are between poverty, gender and NCDs.
- **Section 3** discusses **WHY** it is important for health professionals to address NCDs from efficiency, equity and human rights perspectives.
- **Section 4** discusses **HOW** health professionals and NCD control programmes can address poverty and gender concerns in the prevention, treatment and control of NCDs. Examples of good practice are presented to illustrate potential interventions.
- **Section 5** provides notes for facilitators.
- **Section 6** is a collection of tools, resources and references to support health professionals in their work in this field.

1. What are noncommunicable diseases?



1. What are noncommunicable diseases?

Defining noncommunicable diseases

NCDs make up a large and growing proportion of human illness globally. NCDs include cardiovascular diseases (CVDs), mainly heart disease and stroke; cancer; chronic respiratory diseases; diabetes; mental health disorders; others, such as vision and hearing impairment, oral diseases, bone and joint disorders, and genetic disorders; substance abuse; and injuries, including those caused by violence and gender-based violence.

The term “noncommunicable diseases” is used to distinguish this group of diseases from communicable diseases, or those that are caused by an infective agent (bacterium or virus). Recent evidence suggests that the boundary between communicable and noncommunicable diseases is

less clear than suspected initially. In fact, an infective agent partly causes or triggers some NCDs. Infective agents have been found to cause certain cancers, arthropathies and types of epilepsy, and have been implicated as a cause or trigger in coronary heart disease and type 1 diabetes.³

In response to this blurring of the boundary between communicable and noncommunicable diseases, the term “chronic disease” has been proposed and is used sometimes as an alternative. The World Health Organization (WHO) defines chronic diseases as “diseases that have one or more of the following characteristics: they are permanent, leave residual disability, are caused by nonreversible pathological alterations, require special training of the patient for rehabilitation, or may be expected to require a long period of supervision, observation and care.”⁴

Box 1: An overview of the most common noncommunicable diseases

Heart disease occurs in many forms, the most common of which is coronary heart disease (also known as coronary artery disease or ischaemic heart disease). It is caused by a buildup of plaque (atherosclerosis) that leads to hardening and narrowing of the arteries, which reduces the flow of blood to the heart.

Stroke is a disease of the brain caused by a disruption of the blood supply. This can result from a blockage (ischaemic stroke) or rupture of a blood vessel (haemorrhagic stroke).

Cancers are a range of diseases in which abnormal cells proliferate and spread out of control.

Chronic respiratory disease is a disease of the lungs that takes many forms. The most common are chronic obstructive respiratory disease and asthma. An irreversible obstruction of the larger airways in the lung causes chronic obstructive respiratory disease, while a reversible obstruction of the smaller airways causes asthma.

Diabetes is characterized by raised blood glucose (sugar) levels that result from a lack of the hormone insulin, which controls blood glucose levels; and/or an inability of the body’s tissues to respond properly to insulin. The most common type of diabetes is type 2, which is largely the result of excessive weight and physical inactivity. The usual childhood form of diabetes (type 1 diabetes) is caused by an absolute lack of insulin. Without insulin, type 1 diabetes is rapidly fatal.

Common mental health disorders encompass depressive and anxiety disorders.

Substance abuse describes chronic use of dependence-producing substances that damage health.

Injury is damage or harm to the structure or function of the body caused by an outside agent or force

Violence, including gender-based violence, is defined by WHO as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.”⁵

Sources: World Health Organization 2001a and 2005a; Krug *et al.* 2002.

The term chronic disease recognizes that diseases categorized as NCDs usually require care over many years, and often for the remainder of an individual's life. However, this definition of chronic diseases also covers communicable diseases with similar long-term health care requirements, such as HIV/AIDS. The appropriateness of these two terms continues to be debated, and both are used. This module uses noncommunicable disease or NCD.

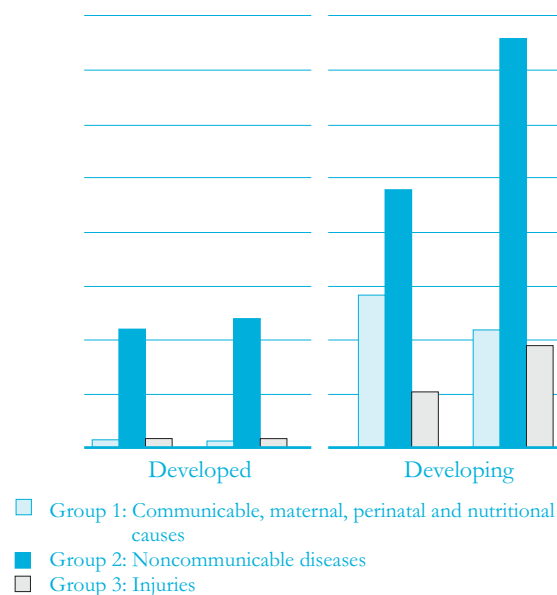
An overview of the burden of NCDs

NCDs are rising at an alarming rate. Of the 58 million deaths worldwide in 2005, NCDs caused an estimated 35 million (60%). This means that NCDs killed almost twice as many people as did communicable, maternal, perinatal and nutritional conditions combined. Injuries and violence contributed an additional 5 million deaths, or 9% of total mortality.⁶

In addition to causing a growing number of deaths, NCDs cause a considerable share of disability. A widely used summary measure, disability adjusted life year (DALY), captures this wider burden of disease. This measure combines the number of years of healthy life lost to premature death with time spent in less than full health (disability). Estimates, in DALYs, of the global burden of disease in 2005 show that NCDs caused roughly 50%. In comparison, communicable diseases, maternal and perinatal conditions and nutritional deficiencies combined caused 39% of the global burden of disease, with injuries contributing an additional 13%.⁷

NCDs and injuries are estimated to be the predominant cause of morbidity and mortality among adults 15 years old and above.⁸ Of the 45 million adult deaths in 2002, almost three quarters (32 million) were attributed to NCDs.⁹ Although the death rate for NCDs rises with age, an estimated 45% of deaths from NCDs occur among adults who are under 70 years old.¹⁰ Similarly, the number of DALYs lost from NCDs is greatest among middle-aged adults. Based on these and other estimates, NCDs are understood to be the fastest growing health problem worldwide (Figure 1). Yet, according to WHO, NCDs

Figure 1: Projected changes in deaths in developed and developing countries (millions of deaths)



Source: World Health Organization 2002c.

tend to be invisible, underestimated and under-addressed.¹¹

The rapid increase in NCDs is largely ascribed to relatively few health conditions. CVDs are the leading contributor, causing about half of all NCD deaths.¹² Of particular concern is that middle-aged adults account for one third of CVD deaths. CVDs, thus, cause as many deaths among young and middle-aged adults as does HIV/AIDS.¹³ Heart disease and stroke similarly account for roughly one third of deaths globally, and are the two leading causes of mortality and disease burden among adults over 60 years old.¹⁴ Cancer deaths are also rising. Cancer is estimated to have caused 7.1 million deaths in 2002, 17% of which were attributed to lung cancer.¹⁵ Table 1 outlines the 10 leading causes of disease burden among men and women 15 years old and above, as of 2002.

The escalating epidemic of NCDs is of particular concern in the Western Pacific Region, where NCDs account for seven of every 10 deaths. Hypertension and diabetes are growing rapidly in Asian countries in the Region. Meanwhile, the Pacific Islands are experiencing some of the highest

Table 1: Leading causes of disease burden worldwide for males and females 15 years old and above, 2002

Males		Females	
	DALYs (%)		DALYs (%)
1. HIV/AIDS	7.4	Unipolar depressive disorders	8.4
2. Ischaemic heart disease	6.8	HIV/AIDS	7.2
3. Cerebrovascular disease	5.0	Ischaemic heart disease	5.3
4. Unipolar depressive disorders	4.8	Cerebrovascular disease	5.2
5. Road traffic injuries	4.3	Cataracts	3.1
6. Tuberculosis	4.2	Hearing loss, adult onset	2.8
7. Alcohol use disorders	3.4	Chronic obstructive pulmonary disease	2.7
8. Violence	3.3	Tuberculosis	2.6
9. Chronic obstructive pulmonary disease	3.1	Osteoarthritis	2.0
10. Hearing loss, adult onset	2.7	Diabetes mellitus	1.9

Source: World Health Organization 2003.

rates of obesity and diabetes in the world, and have significant rates of CVD and cancer.¹⁶ More than half of liver cancer deaths worldwide are estimated to occur in the Region.¹⁷ More specifically, recent estimates suggest that NCDs accounted for more than 9.5 million deaths in the Region in 2005, or

roughly 77% of the nearly 12.4 million deaths from all causes. Of the remaining deaths, communicable diseases, nutrition deficiency, and maternal and perinatal causes combined to cause more than 1.5 million (12.4%), while injuries accounted for nearly 1.3 million (10.3%).¹⁸

2. What are the links between poverty, gender and noncommunicable diseases?



2. What are the links between poverty, gender and noncommunicable diseases?

Traditionally, NCDs have been characterized as diseases of affluent, ageing communities. Often termed “lifestyle” diseases, these health conditions tend to be viewed as afflicting individuals with the risk factors for these diseases. This perception has contributed to the widespread belief that NCDs are fully under the control of individuals, who need only modify their behaviour to reduce their risk of falling ill (Box 1). Recent evidence on the global burden of disease, supported by case studies from developing countries, reveals that such concepts are largely misleading; risk factors for NCDs are increasingly concentrated in low-income settings, and among individuals with the least power to reduce their risks of falling ill.¹⁹

The epidemiological transition

The shifting profile of NCDs from affluent societies into low-income settings is part of a larger process known as the epidemiological

transition, and the broad changes that drive this process. The theory of the epidemiological transition was conceptualized to provide a framework for considering how changes in population fertility and mortality (demographic change) are related to disease patterns—and how these, in turn, link to broader economic, social and technological change.

Three broad mortality patterns have been identified within this more general process:²¹

1. **The age of pestilence and famine**, with high mortality that prevents sustained population growth
2. **The age of receding pandemics**, when mortality declines progressively and the rate of decline accelerates as epidemic peaks disappear
3. **The age of degenerative and human-made diseases**, with a continuing mortality decline towards stability at a relatively low level. This

Box 2: Risks vs. determinants of noncommunicable diseases—the ‘food deserts’ example

The terms “risks” and “determinants” of ill health are often used interchangeably. The World Health Organization (WHO) defines risk as “a probability of an adverse outcome, or a factor that raises this probability”.²⁰ In contrast, determinants of ill health comprise factors that significantly influence health outcomes. In this way, determinants of ill health are conceptualized as the root causes of ill health, and not elements that increase the probability of falling ill. In many cases, determinants of ill health encompass socioeconomic conditions over which individuals and households have little, if any, direct control.

Noncommunicable diseases (NCD) bring out the importance of this distinction even more sharply. NCDs are commonly referred to as lifestyle diseases, implying that individuals exercise complete control over the choices that create a given lifestyle. Yet, individuals make choices within a broader economic and social context. The choices individuals are able to make concerning their lifestyles can be severely limited in some contexts, such as those characterized by poverty and gender inequality, while other contexts may be more supportive of such choices.

The complexities inherent in this debate are illustrated in the phenomenon of “food deserts” in developed countries. Food deserts are areas where access to cheap, varied and nutritious food is unavailable. Because of this, people residing in these areas do not have the opportunity to make healthy food choices. In the United Kingdom, for example, supermarkets located on the edges of towns or away from large public housing estates are largely inaccessible for families without access to a vehicle. Thus, strategies to improve the nutrition of people living in these areas would focus on means to increase access to a cheap and nutritious food supply through low-cost and reliable public transit, or efforts to encourage local shops to carry affordable nutritious foods. Other studies have found that food deserts do not influence poor nutritional outcomes. One such study argues that food prices, socioeconomic deprivation and lack of locally available supermarkets do not influence fruit and vegetable intake. Much debate continues concerning whether the phenomenon of food deserts is a concept that usefully guides policy responses to poor nutrition.

Sources: World Health Organization 2002; Nelson 2000; Pearson *et al.* 2005; Cummins and Macintyre 2002.

phase represents the time at which NCDs become the main health problems within a population

More recently, a fourth stage was proposed—the age of delayed degenerative diseases. This state describes the shift from NCDs afflicting adults between their 30s and 50s to a concentration among elderly adults (60s–80s). These stages aptly describe the population of Western Europe and North America.²²

Although debate continues to centre on the speed at which societies move through these stages, this model offers insights into why some populations continue to suffer from high levels of communicable disease as NCDs emerge. It also enables analysis of how subgroups within populations, most notably those who are poor and marginalized, may progress through the stages of the epidemiological transition at rates that differ from those of more affluent groups. This is reflected most clearly perhaps in the increasing concentration of NCDs among poor and socially excluded populations in developed countries, and evidence that a similar trend is emerging in developing countries.²³

The epidemiological transition has shifted the disease burden in many developing countries in the Region, which is manifested in a double burden

Table 2: Gross domestic product growth (annual %)

Country	2000	2001	2002	2003	2004
Cambodia	7	6	5	5	6
China	8	8	8	9	10
Fiji	(3)	3	4	3	4
Lao PDR	6	6	6	5	6
Malaysia	9	0	4	5	7
Mongolia	1	1	4	6	11
Papua New Guinea	(1)	(2)	(1)	3	3
Philippines	6	3	3	5	6
Samoa	7	6	1	(1)	3
Solomon Islands	(14)	(9)	(2)	5	4
Vanuatu	3	(3)	(5)	2	3
Viet Nam	7	7	7	7	8

Source: World Bank 2006.

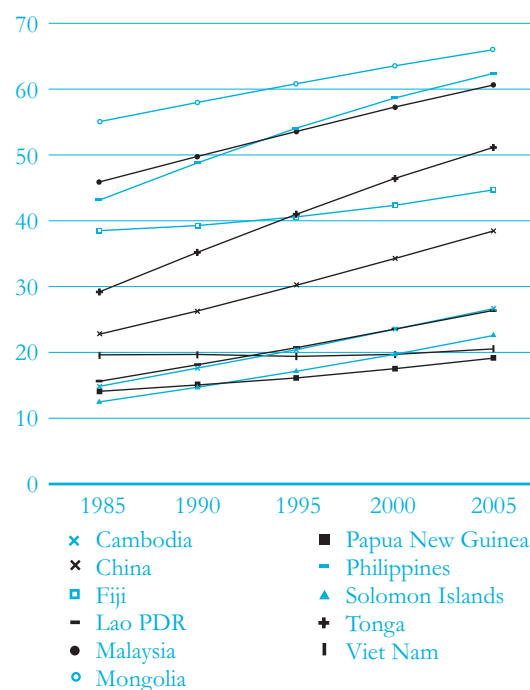
of disease. That is, developing countries continue to suffer from communicable diseases as NCDs emerge and then rapidly expand throughout the population. During this transition, NCDs show signs of slowly beginning to cluster among poor and marginalized populations as more affluent populations decrease their exposure to the risk factors that drive the NCD epidemic. This trend has already appeared among developed countries in the Region, where NCDs are concentrated among poor and socially excluded communities.

Determinants of the epidemiological transition

Economic growth and urbanization

Socioeconomic, cultural, political and environmental determinants drive the mortality patterns described in the four stages of the epidemiological transition. Economic growth, accompanied by industrialization, urbanization and population ageing, is particularly important. Many countries in the Western Pacific Region have experienced rapid rates of economic and social

Figure 2: Urbanization in selected countries in the Region, 1985–2005 (%)



Source: UN Habitat 2005.

change. From 2000 to 2004, annual average economic growth rates varied among countries in the Region, from 8.6% in China to 3.2% in the Solomon Islands (Table 2).

Structural changes at the national level usually accompany economic growth. That is, industrial output as a percentage of gross domestic product (GDP) increases, while agricultural output as a percentage of GDP shrinks. These changes reverberate throughout society: rural-urban migration often occurs, urbanization increases, and social and cultural norms tend to shift (Figure 2). Box 3 describes how such changes are often manifested in shifting dietary norms in the Region. These, in turn, are often manifested in improved health outcomes and greater longevity.

Urban living conditions tend to be associated with higher risk for NCDs than are rural living conditions. Studies have reported higher levels of physical inactivity and unhealthy diets, among other risk factors for NCDs, in urban areas. In the Region, urban populations seem to have adopted diets high in sugar, fats, salt and refined foods, and low in dietary fibre and micronutrients, more than their rural counterparts, who appear to have

maintained more traditional diets. A national nutrition survey in 1987–1988 in Micronesia found that, among women 15–49 years old, those residing in rural outer islands consumed less fat than did those dwelling in urban areas. Sugar intake and consumption of imported food was similarly higher among urban women.²⁴ Although the mean energy intake of urban and rural women in Malaysia was found to be similar, fat contributed 30% of the calories consumed by urban women and 20% of those consumed by rural women.²⁵ A study in 1994–1995 compared the physical activity by Huli-speaking villagers in the rural Highlands of Papua New Guinea and Huli-speaking migrants in urban settlements in Port Moresby, the capital city. The study reported that urban men and women were less physically active than their rural counterparts, although this finding was not significant for men. More specifically, urban residents spent more time sedentary and less time active than rural residents. However, urban men slept less than did their rural counterparts²⁶

Population ageing

Falling mortality, particularly among infants and young children, and declining fertility rates often

Box 3: Nutritional transition and the Republic of Korea—an anomaly of sorts

While country-specific food availability and cultural dietary norms are still important, evidence shows that dietary patterns in the Region are changing broadly with economic growth and urbanization. This shift is often referred to as the nutritional transition. A strong positive association between income and consumption of animal protein has been observed, and food and drink in the Region have been described as increasingly energy-dense. This is understood to occur because of decreased intake of vegetables and fruit and other high-fibre starchy food, and increased consumption of animal fat, vegetable oil, sugars and syrups in poorer quality food and drink. Urbanization is a driving force behind these shifts in diet, as urban dwellers tend to consume a diet rich in animal proteins and fats.

The negative trends of this transition are not inevitable, as illustrated by the Republic of Korea. The rapid nutritional transition in the Republic of Korea is unique because many aspects of the traditional Korean diet have been maintained. The major dietary changes are a significant increase in animal food products and a decline in cereal intake. Plant foods, including fruits and vegetables, continue to be central to the dietary intake of Koreans. Notably, per capita intake of vegetables in the Republic of Korea is among the highest in Asia. Conversely, fat intake is significantly lower than would be predicted based on the country's economic development. For example, the Republic of Korea's fat intake is lower than that in China—even though China's gross domestic product per capita was 25% of that of the Republic of Korea in 1996. Retaining a traditional diet high in vegetables has resulted in relatively low levels of obese and overweight people, and lower rates of noncommunicable diseases than in other countries with similar levels of economic development.

Sources: Drewnowski and Specter 2004; Joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases 2002; World Health Organization Regional Office for the Western Pacific 2003d; Lee, Popkin and Kim 2002; Du et al. 2002.

Table 3: Population under 15 and over 65 years old in countries in the Region

Country	%< 15	%>65
American Samoa	37.7	3.7
Australia	20.5	12.3
Brunei Darussalam	32.5	3.4
Cambodia	42.8	3.5
China	23.9	7.6
Cook Islands	28.3	7.0
Fiji	33.4	3.4
French Polynesia	32.5	4.0
Guam	34.9	6.0
Hong Kong, China	17.2	11.2
Japan	14.8	16.7
Kiribati	40.0	3.5
Lao People's Democratic Republic	44.0	4.0
Macao, China	22.4	8.0
Malaysia	na	na
Marshall Islands	42.9	2.2
Micronesia, Federated States of	40.0	3.6
Mongolia	35.1	3.9
Nauru	38.9	1.5
New Caledonia	29.0	5.6
New Zealand	23.0	11.7
Niue	32.6	8.3
Northern Mariana Islands	24.7	1.7
Palau	26.8	5.2
Papua New Guinea	40.2	2.4
Philippines	35.6	4.1
Republic of Korea	21.7	7.1
Samoa	41.5	4.6
Singapore	21.5	7.3
Solomon Islands	41.5	3.4
Tokelau	41.7	6.6
Tonga	39.0	5.2
Tuvalu	33.7	6.6
Vanuatu	43.2	2.8
Viet Nam	na	na
Wallis and Futuna	34.8	5.4

Source: World Health Organization Regional Office for the Western Pacific 2003b.

accompany economic growth. Shrinking fertility rates reduce the proportion of children in a population; declining mortality increases the proportion of adults 60 years old and above, as people tend to survive childhood and adulthood.

Table 4: Projected global noncommunicable disease mortality rates by age, 2005 (deaths per 100 000)

Age group	Males	Females	Total
0–29	48	47	48
30–58	372	251	311
60–69	2328	1533	1911
70 and over	6981	6102	6467
All ages	556	543	549

Source: World Health Organization 2005a.

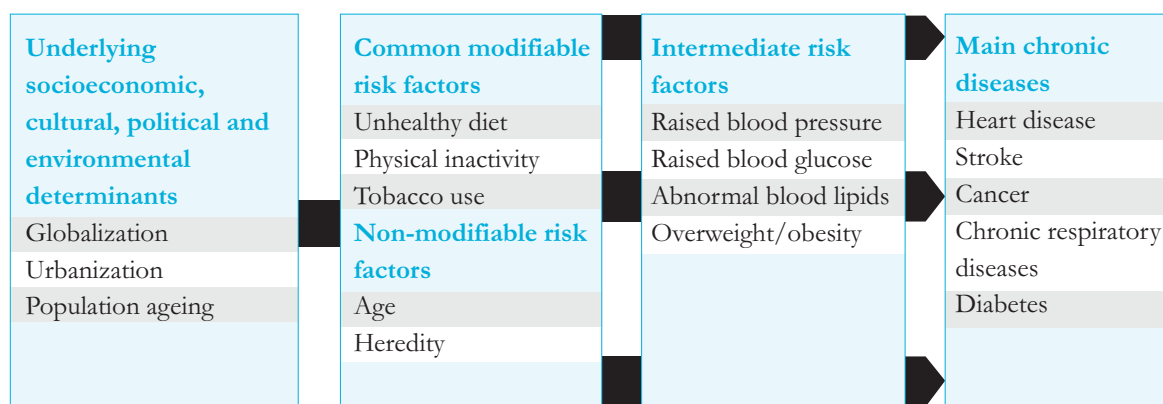
Together, these trends increase the proportion of older people within wealthier populations, a demographic shift that is being replicated throughout the world at varying rates. Estimates suggest that the older population in Western Pacific Region will increase faster than in almost any other WHO Region.²⁷ Table 3 presents the percentage of population under 15 years old and over 65 years old in countries in the Region.

Population ageing parallels the rise in the burden of NCDs among developing countries in the Region. The risk factors for NCDs accumulate with age, resulting in increased risks of NCDs and a greater likelihood of suffering from NCDs over time (see the section on a life course approach). Thus, NCDs are more likely to strike older adults than younger adults and children (Table 4).²⁸ However, the age-specific rates of some NCDs, such as CVDs, diabetes and some cancers, are increasing substantially as well. This is because of the growing overall prevalence of risk factors for NCDs associated with increased urbanization and the other determinants of the epidemiological transition.

The common risk factors for noncommunicable diseases

In response to these economic, social and environmental changes, individuals adapt and alter their lifestyles in ways that tend to increase their exposure to the risk factors for NCDs (Figure 3). Estimates indicate that more than half the deaths from NCDs are attributable to relatively few risk factors: tobacco use, raised blood pressure and poor diet. More specifically, at least 80% of heart disease, stroke and type 2 diabetes, as well as 40%

Figure 3: Causes of noncommunicable diseases



Source: World Health Organization 2005a.

of cancer, could be avoided through healthy diet, regular physical activity and avoidance of tobacco use. The relative importance of the risk factors of NCDs has not been elucidated. Thus, it remains unclear whether the key risk factors for NCDs carry equal weight across countries, or whether country-specific variations in the relative importance of these risk factors might be observed as more evidence is generated.²⁹

As Figure 3 shows, differentiating between modifiable and non-modifiable risk factors and intermediate risk factors for NCDs is useful. Common modifiable risk factors are an unhealthy diet, physical inactivity and tobacco use. Intermediate risk factors are raised blood pressure, raised blood glucose, abnormal blood lipids, and overweight and obesity. The combination of modifiable and non-modifiable risk factors leads to intermediate risk factors, which are associated with increased probability of NCDs later in life. This distinction is particularly helpful when considering poverty and gender concerns, because poverty and gender can influence modifiable risk factors such as diet, alcohol consumption, smoking, physical activity and others, rather than affecting NCDs or the intermediate risk factors for NCDs.

Importantly, the socioeconomic, cultural and environmental determinants of the epidemiological transition described above interact with, and can reinforce, inequalities within societies. This is reflected in the differential impact these processes have on the health of various segments of society. Poor and

marginalized members of society, such as ethnic minorities, landless labourers or the urban poor, can be especially vulnerable to the adverse effects of social and economic change. The impact social and economic change have on the health of marginalized communities can be mediated by their capacity to respond to the risk factors for NCDs, and by their ability to access effective diagnosis, treatment and care for morbidity due to NCDs. Yet, in many cases, poverty or social exclusion can limit the capacity of these groups to take the actions necessary to reduce their exposure to the risk factors for NCDs, and to access effective diagnosis, treatment and care for NCDs.

In developed countries, the increasing concentration of the risk factors for NCDs among poor and socially excluded communities illustrates this phenomenon clearly. This has led to a shift in the burden of NCD morbidity to low-income populations in these countries. With time, these trends—together with inequalities in access to effective diagnosis, treatment and care for NCDs—have increased the burden of NCD mortality among poor populations within developed countries. As the NCD epidemic progresses in developing countries in the Region, a similar trend is emerging. This suggests that poverty is increasingly a key determinant of the expanding NCD epidemic in developing countries.

These links between poverty and NCDs are discussed in greater detail below. Because gender

and poverty interact to produce unique disadvantages for poor women, gender is considered separately in the discussion that follows.

A life course approach

A more nuanced way of understanding the differential prevalence of NCDs among various populations is to take a so-called life course approach. Research suggests that events from fetal life onwards can influence the chance of developing NCDs later in life. Exposure to health-damaging or -supporting environments accumulates over time—beginning in utero and continuing through infancy, childhood, adolescence, and into adulthood. This can translate into increased risks of NCDs and a greater likelihood of suffering from NCDs over time.³⁰ Questions concerning whether exposure to risk factors for NCDs at some stages of the life course is of more or less importance than exposure at other stages remain unanswered. Clearly, however, the risk of NCDs increases with the length of exposure to many of the risk factors. Where sufficient data are available, this approach is taken in the sections below.

The effect of poverty on noncommunicable diseases

Evidence is building about the growing burden of NCDs across developing countries in the Region. Some of the evidence suggests that the burden of NCDs is beginning to shift to poor and marginalized populations. Thus, the changing distribution of NCDs in developing countries is beginning to mirror the pattern in several developed countries, where socioeconomic status and the prevalence of NCDs have a clear inverse relationship. As evidence on this trend grows, poverty and social exclusion increasingly are recognized as important aspects of the growing epidemic of NCDs in the Region.

The changing distribution of the common risk factors for NCDs

The rising importance of relatively few modifiable and intermediate risk factors is

Box 4: Defining poverty

Poverty is often described as a state in which the income or consumption of an individual or household falls below a given level. While this is a useful means of identifying the poor, and measuring and comparing poverty levels across areas and countries, it glosses over the complexity of how poor individuals experience poverty. To capture these diverse aspects, poverty has come to be conceptualized as multidimensional—i.e., encompassing not just low income, but lack of access to services, resources and skills; vulnerability and insecurity; and voicelessness and powerlessness. This definition of poverty is used in this module. Importantly, different members of a household experience poverty in different ways. Men and women have particularly different poverty experiences, because poverty overlaps with and reinforces prevailing social norms and gender inequalities.

For more information on how to define and measure poverty, please see the Foundational Module on Poverty in this Sourcebook series.³¹

driving the epidemic of NCDs across developing countries. A growing body of evidence shows that the risk factors for NCDs are prominent in developing countries in the Region. Physical activity is declining rapidly as transportation and occupations are mechanized, diets become increasingly high in fat, and tobacco use remains prevalent among men and rises among women.

Poor and marginalized populations within developing countries increasingly are exposed to these risk factors for NCDs. Indeed, some risk factors for NCDs are beginning to cluster among the poor. For example, tobacco use is often higher among poor men than better-off men. The complexities inherent in the socioeconomic changes that propel the shifting burden of risk factors for NCDs to poor populations suggest that this will be a dynamic and uneven process. Poor populations might be exposed to some risk factors, such as tobacco and unhealthy diets, more quickly than others, such as physical inactivity. As more affluent members of society begin to protect

themselves from these risk factors, the burden of NCDs likely will be found increasingly among the poor, who generally have less ability—because of less knowledge, lower incomes or other reasons—to reduce their exposure to such risks and make healthy life choices.

Much of the evidence on the changing distribution of modifiable and intermediate risk factors for NCDs in the Region comes from studies on tobacco use and obesity, which are among the most common modifiable risk factors for NCDs. Thus, these are presented separately. Where possible, evidence on the distribution of the other common modifiable and intermediate risk factors for NCDs is also presented.

Modifiable risk factors

Unhealthy diets—a growing concern in the Region

Countries throughout the Region, even those with low levels of economic development, are shifting towards a diet high in fat. In Viet Nam, for example, the population is consuming fewer carbohydrates and greater proportions of protein from animal sources (pork, poultry and beef).³² From 1990 to 1999, per capita meat consumption in Viet Nam increased by 4.4% per year.³³ A similar shift towards a diet high in energy-dense food and rich in fats at the expense of complex carbohydrates has been observed in Malaysia.³⁴ In Mongolia, animal fat constitutes 75% of total fat

Box 5: Globalization and food importation in Tonga

Globalization increasingly is associated with economic growth and social change. Globalization may be defined as the process through which the world is becoming increasingly interconnected and interdependent. Yet the health implications of this process remain ambiguous. Globalization can impact health through a number of complex pathways that are poorly understood. However, globalization might be an important contributor to the worldwide spread of the risk factors of NCDs. This trend is illustrated by dietary change.

In many developing countries, the average daily fat intake has increased, which has been linked to the marketing and increased availability of fast foods and other foods high in fats. In particular, the globalization of the food trade has seen large shifts towards diets high in sugar, fats, salt and refined foods, and low in dietary fibre and micronutrients. In Tonga, imported foods account for a growing proportion of dietary consumption. These foods include meats with high fat content, especially corned beef, mutton flaps and chicken parts, and dense simple carbohydrates, such as refined sugar and flour.

To determine why people in Tonga choose to consume imported foods that are less healthy than locally available foods, a study examined the consumption habits of 430 Tongans in six villages throughout the three main regions of the country. The villages represented rural and urban communities, as well as those that were remote and those that were better served.

Among the study population, the most frequently consumed foods were cassava, bread, mutton flaps, taro greens, hibiscus greens, yams and imported chicken parts. Respondents ate foods rated as being the most preferred less frequently than those rated as less preferred. Although bread, mutton flaps and imported chicken parts were rated among the least preferred foods, they were found to be among those most frequently consumed.

The study population's knowledge about the nutritional values of the locally produced and imported foods they consumed was found to be quite high. Imported simple carbohydrates and fatty meats were rated as having low nutritional value. The study concluded that the cost and availability of imported food was motivating the consumption habits of Tongans, rather than their food preferences. Locally available, low-fat sources of protein, such as fish, were calculated to cost 15%–50% more on average than mutton flaps or imported chicken parts.

Sources: Thang and Popkin 2004; Popkin and Gordon-Larsen 2004; Evans et al. 2001.

intake.³⁵ National nutrition surveys in the Philippines have recorded increased intake of most of the basic food groups, except for fruits, over the past decade. According to these surveys, Filipinos are consuming more energy overall, and animal fat is contributing more to food and protein intake.³⁶ The nutritional transition is especially marked in the Pacific, where imported energy-rich foods have largely replaced traditional diets (Box 5). In Micronesia, vegetables and fruits were found to be almost nonexistent in the diet of women 15–49 years old.³⁷ Instead, consumption of imported foods high in fat, sugar and salt was common.³⁸ The majority of the population in French Polynesia exceeded the WHO recommendations for intake of major nutrients: energy (62.2% of the population), fat (71.6%), protein (72.6%) and cholesterol (83%). Low intake of carbohydrates was recorded among 84% of the population.³⁹

Children and adolescents in the Region are also increasingly consuming a diet rich in energy-dense food. A study of the eating habits of children in Cebu, Philippines, notes that snack foods, especially pan de sal (a soft bread roll) and soft drinks, constitute 40% of the calorie intake of children in the study.⁴⁰ Adolescents in Malaysia are consuming more energy-dense food and refined carbohydrates.⁴¹ Earlier and prolonged exposure to an unhealthy diet probably will increase the likelihood of developing NCDs.

Urban-rural differentials in the pattern of unhealthy diets

Urban-rural variations in diet are observed in many countries in the Region. As discussed above, higher levels of unhealthy diets have been observed among urban populations than those in rural areas. In 1980, a case study in Fiji found that energy intake was higher in rural areas than in urban areas. However, the percentage of energy from fat was higher among urban than among rural groups; conversely, the percentage of energy from carbohydrates was lower in urban than in rural groups.⁴² Overall, rural Fijians have retained their traditional dietary pattern. Urban diets, with high levels of sugar, rice, fatty meat and white bread, are of poorer quality than rural diets.⁴³

Similar trends have also been observed in Kiribati and Vanuatu.⁴⁴

While such urban-rural differences are found throughout the Region, some evidence suggests that this pattern is slowly changing, as rural communities adopt increasingly unhealthy diets. In Jiangsu Province, China, grain and vegetable consumption decreased among people from urban and rural households from 1990 to 1999. During this period, consumption of animal products increased by 23.4% among urban households and by 34.1% among rural households.⁴⁵ A second study from China, using data from the China Health and Nutrition Survey, found that from 1991 to 1997 the consumption of animal source foods increased by 23% in urban areas and 27% in rural areas. The consumption of edible oil similarly increased more in rural areas (19%) than in urban areas (11%). Although the proportion of adults consuming a diet high in fat (defined as more than 30% of calories coming from fat) remained higher in urban than in rural areas, the prevalence of high-fat diets appeared to be rising faster in rural than in urban areas.⁴⁶ Another study from China noted that simple urban-rural divisions mask important variations within areas. Again using China Health and Nutrition Survey data, the study showed that rural areas with high urbanization had dietary patterns that were similar to those in formally designated urban areas—high intakes of animal fats and oil. Diets low in animal fats and edible oils were observed only in rural areas with low levels of urbanization.⁴⁷ This suggests that the gap in urban-rural consumption patterns is narrowing slowly.

Socioeconomic differences in unhealthy diets

Studies from various countries in the Region suggest that, although higher levels of unhealthy diets continue to be found in more affluent groups than poor and marginalized ones, the income disparity in the consumption of unhealthy diets has narrowed considerably. This might be attributed partially to rising incomes across all households in countries with swiftly growing economies, such as China. For example, while China's farmers are still poorer than their urban counterparts, their diet has shifted towards animal

products—the same way as diets in urban areas—as their household incomes have risen.⁴⁸ More importantly, perhaps, poor communities appear to be adopting the dietary patterns previously observed in more affluent communities. Results from a second study in China showed that consumption of animal fats and edible oils is increasing more quickly in low-income groups than high-income groups.⁴⁹ Adults in the lowest third of the income distribution increased their consumption of animal fats by 44% in urban and rural areas. In comparison, consumption of animal fats increased by 20–25% among those in the highest third of the income distribution. Thus, although higher-income groups continue to consume more animal fats, the income disparity in the intake of animal fats has narrowed considerably. Similar evidence has been observed in Viet Nam. A study, using data from the Viet Nam Living Standards Measurement Survey, observed that the gap between the nutrient intake of the poor and the non-poor narrowed significantly from 1992–1993 to 1997–1998. Further, the study found that the nutrient intake from rich proteins and lipids was greater for the poor and rural individuals than the non-poor and those residing in urban areas. Rural residents also decreased their consumption of calories from carbohydrates and increased those from protein and lipids significantly more than urban residents.⁵⁰ For example, over this 5-year period, the number of kilocalories (kcal) per day from lipids increased from 287.1 to 333 (a 45.9 kcal/day increase) among the non-poor and 153.9 to 253.8 kcal/day (a 99.9 kcal/day increase) among the poor. However, the study notes that the poor and other vulnerable groups continue to consume a diet that is of poorer quality than that consumed by the better-off population.

The double burden of malnutrition and obesity in developing countries is of special concern, because of the growing body of evidence that malnutrition in utero is linked to greater likelihood of NCDs during adulthood. Both maternal undernutrition and overnutrition have been found to harm fetal growth. Maternal undernutrition has resulted in in utero growth retardation and low birth weight (LBW), which has been linked to an increased risk of NCDs later in life.⁵¹ For example, many studies

have shown that characteristics at birth, such as LBW, as well as large abdominal girth, are associated with an increased risk of diabetes and hypertension as an adult.⁵² Poor weight gain during the first year of life has been associated with increased risk of heart disease as an adult. For babies who were small, increased weight gain after 1 year was also associated with an increased risk of CVDs.⁵³

Physical inactivity

People in the Region are less physically active than before, largely due to growing access to modern tools and motorized transport, and increased urbanization. A study in China found that the proportion of urban adults working in occupations that require rigorous physical activity is decreasing. By contrast, evidence shows that adults working in rural areas are engaging in increased physical activity. In general, rural residents hold multiple jobs and exert more intense effort while at work. However, this pattern is ambiguous for rural women: a larger proportion of rural women are engaged in more energy-intensive work, but the number of rural women engaged in light work is also increasing. The proportion of rural men engaged in light work has decreased.⁵⁴

The transition to urban living is likewise affecting adolescents in the Region, who are leading increasingly sedentary lives. This phenomenon has been documented in Malaysia, although data on physical activity patterns among youth in the developing world are generally lacking.⁵⁵ One study examined physical activity patterns among Chinese youth (6–18 years old) who were attending school. Significant differences based on age were observed for boys and girls. Older children were more likely to walk to school, and fewer engaged in moderate to vigorous physical activity during school hours. Overall, few children engaged in moderate to vigorous physical activity outside of school hours.⁵⁶ In China, although 90% of households own a television, only 8% of youth watch more than two hours of television per day. This is in contrast to the Philippines, where television ownership ranges from 73–80%, and 48% of youth watch

two or more hours of television per day.⁵⁷ A study of children attending school in Manila, Philippines, found that children from private schools appeared to be less physically active than children from public schools. This is because children attending private schools were more likely to be driven to school, watch television and play computer games than children from public schools, who tended to walk to school and engage in outdoor games.⁵⁸

Tobacco use

Some of the clearest evidence of how the risk factors for NCDs are beginning to cluster among low-income communities in developing countries comes from studies on tobacco use. Tobacco use is a major cause of death worldwide; one of every two smokers dies from tobacco-related diseases.⁵⁹ Further, 82% of the world's smokers are from developing countries. In contrast to the sustained decline in the prevalence of smoking in high-income countries, tobacco consumption is on the rise in most developing countries.⁶⁰ However, important differences between men and women are apparent. For example, an estimated 50% of men in developing countries smoke, compared to 35% of men in developed countries. In contrast, a larger share of women (22%) from developed countries smoke in comparison with women (9%) in developing countries.⁶¹

The Western Pacific Region has the most smokers, the most men smokers, and the fastest growing tobacco uptake among women and young people of any WHO Region.⁶² In 2002, tobacco was identified as one of the top three major risks to health in developed and developing countries in the Region.⁶³ Table 5 shows the proportion of smokers in the population of selected countries in the Region.

As with the other major risk factors for NCDs, tobacco use is largely determined by behaviour learned at a young age. The negative health impacts of smoking accumulate over time, and several factors increase the likelihood of adverse health outcomes, including the age of initiation, duration, cigarettes smoked per day, degree of inhalation, tar and nicotine content, and use of smokeless

Table 5: Smokers in selected countries in the Region (%)

Country	Men	Women	Overall
Cambodia	66.7	10.0	35.0
China	53.4	4.0	28.9
Fiji	52.3	23.0	37.8
Lao PDR	41.0	15.0	38.0
Mongolia	67.8	25.5	51.5
Papua New Guinea	76.0	80.0	*
Philippines	50.6	8.0	23.5
Solomon Islands	*	33.0	*
Viet Nam	50.7	3.5	25.7

* no data available

Source: World Health Organization 2003d.

tobacco.⁶⁴ Evidence shows that the negative health effects of smoking—such as higher risks for CVDs—are much greater for individuals who start smoking before 16 years old than for those who start smoking later in life.⁶⁵

A recent series of studies shows that a large proportion of smokers in developing countries begin as teenagers.⁶⁶ Surveys of students 13–15 years old were undertaken in a number of developing countries in the Region in 2002 and 2003. The surveys found that the prevalence of smoking among this cohort ranges from 7.9% for boys and 1.0% for girls in Cambodia to 43.6% for boys and girls in the Cook Islands. An estimated 70.4% of students in the Cook Islands had smoked cigarettes at some point. In Viet Nam, the prevalence of ever smoking among students ranged from 10.4% in Hanoi to 22.9% in Tuyen Quang. Students in the mountainous province of Tuyen Quang were more likely to smoke than students in any of the cities surveyed (Ho Chi Minh, Ha Noi, Hai Phong and Da Nang).

As the prevalence of smoking by adolescents increases, little evidence is available to suggest that they stop smoking later in life. The rates of quitting are lower in developing countries than those in developed countries. In developed countries, an estimated 20–40% of smokers have quit. In contrast, surveys undertaken during the 1990s found that the proportion of men who reported having quit smoking was 2% in China, 5% in India, and 10% in Viet Nam.⁶⁷ Further, men

Box 6: The socioeconomic gradient of smoking in Republic of Korea

The prevalence of cigarette smoking among men in the Republic of Korea is the highest in the world, though it has decreased from 70.3% in 1989 to 65.4% in 2001. As in many other countries, the prevalence of smoking in Republic of Korea is inversely associated with socioeconomic status. To assess how inequalities in the prevalence of smoking have changed with time, a study examined smoking patterns among male civil servants 30–49 years old in 1990 and 1998. Women civil servants were excluded from the study because they constituted only 2% of those who had ever smoked. Using monthly salary level in 1990 as an indicator for socioeconomic status, the study observed that the inequalities in smoking prevalence increased between 1990 and 1998. More specifically, the difference in smoking prevalence between the highest and lowest salary groups increased from 13 percentage points in 1990 to 16.1 percentage points in 1998. Similar patterns are becoming evident in developing countries in the Region.

Source: Cho *et al.* 2004.

in higher socioeconomic groups are more likely to quit smoking than are poorer men, which might contribute to the widening health gap between rich and poor in many developing countries.⁶⁸

Studies have found that the prevalence of smoking among developing countries is beginning to mirror the social gradient observed in developed countries, where smoking is inversely associated with socioeconomic status (Box 6). An analysis of 74 studies from high-, medium- and low-income economies showed that, regardless of each economy's level of development, poorer men (variously defined according to income, education or profession) were more likely to smoke than their better-off compatriots. However, the ratio of smoking prevalence between poor and better-off men varied considerably in low-income countries, ranging from 1.6:1 in Costa Rica to 8.8:1 in Delhi, India. The situation for women remains even more variable, perhaps reflecting the more recent onset of widespread smoking among women in developing countries.⁶⁹

An analysis of the 1996 China National Prevalence Survey of Smoking Patterns showed that people with no education were 6.9 times more likely to smoke than those with a university education.⁷⁰ A household survey conducted in rural areas of the Chinese provinces of Henan, Fujian and Shanxi between 1996 and 1998 found that 30.4% of rural inhabitants 15 years old and above were current smokers. Smoking among respondents was found to be negatively associated with education—i.e., those with junior or senior high school education were less likely to be current smokers than those who were illiterate. Farmers also were found to be more likely to be current smokers than respondents from other employment groups, namely technical and professional occupations that require a higher level of education.⁷¹ In Viet Nam, the National Health Survey 2002 showed an association between poverty and risk of smoking, although this association was a little less pronounced in rural areas.⁷² A recent study, using data from the Viet Nam Living Standards Survey, found that the majority of smokers in Viet Nam consume low-cost cigarettes (less than VND 5000 or roughly \$0.35 per pack). Smokers who consume low-cost cigarettes are likely to live in poor households in rural areas, or small towns, with the household head engaged in agricultural work. Poor households spend equivalent amounts on cigarettes and household health, and 1.5 times more on cigarettes than education.⁷³ An estimated 67% of men in Phnom Penh, Cambodia, smoke, while the reported smoking rate for rural men is roughly 86%.⁷⁴

Studies in India describe a significant negative association between education, occupation and smoking. An analysis of the 1998–1999 National Family Health Survey, a nationally representative survey, shows that tobacco consumption was highest among the least educated, the poorest and those belonging to the scheduled castes and tribes.⁷⁵ A study in Mumbai between 1992 and 1994 involving residents 35 years old and above found that professional men and women were least likely to have ever used tobacco, while unskilled workers and unemployed individuals who were the most likely to have done so. However, education level appeared to be a

stronger predictor of tobacco use than occupation. Among men and women, use of smokeless tobacco was highest among those with no education and lowest among those with a college education.⁷⁶ These findings support those of another study, which reported higher rates of tobacco use among individuals with secondary education or below than among college-educated individuals.⁷⁷ A study of adults in urban Delhi during 1985–1986 estimated that 24.5% of the study population smoked. Controlling for gender and age, smokers were found to have lower incomes than non-smokers. Still, education was the strongest predictor of smoking among men and women. Men with no education were 1.8 times more likely to smoke than men with college education. Meanwhile, women with no education were 3.7 times more likely to smoke than were college-educated women.⁷⁸

Intermediate risk factors

The increasing prevalence of the modifiable risk factors for NCDs among developing countries in the Region is reflected in the growing burden of intermediate risk factors for NCDs. Similarly, as the burden of modifiable risk factors for NCDs has slowly begun to cluster among poor and marginalized populations in developing countries in the Region, a similar shift in the burden of intermediate risk factors for NCDs is beginning to emerge.

Overweight and obesity

The changing pattern in diets and physical activity underlies the growing burden of overweight and obesity in developing countries in the Region. In general, the prevalence of obesity and diet-related NCDs has been increasing far more quickly in developing countries than in developed countries.⁷⁹ The mean body mass index (BMI) is rising throughout the Region, and an estimated 33% of men and 31% of women in the Region are obese.⁸⁰

Obesity is becoming increasingly prevalent in Pacific Island communities. Based on the results of a meta-analysis of BMI and ethnicity, the Pacific Islands have the highest prevalence of

obesity in the world.⁸¹ In 2002, a study in Rarotonga community in the Cook Islands showed that at least 80% of the study population was overweight or obese.⁸² Obesity rates are especially high among women in the Pacific. The prevalence of obesity among women was found to be 84% in Tonga, 63% in Fiji and 56–74% in Western Samoa.⁸³ A study in Fiji reported that the prevalence of obesity among adult women had increased from 60% in 1989 to 84% in 1998.⁸⁴ Similar evidence is found in Asian countries in the Region. A case study from Cebu, Philippines, observed a similar trend among adult women: the prevalence of overweight women had increased fivefold from 1984 to 2000. The study explained that this rise mirrors the rapid growth in household incomes and a shift towards higher-fat diets, more sedentary jobs and reduced domestic work burdens during this period.⁸⁵

The growing burden of overweight and obesity in the Region is also seen in the increasing prevalence of overweight and obese children and adolescents. In 1996, a school survey in Arorangi School in Puaikura Vaka, Cook Islands, estimated that 12% of schoolchildren were overweight. A survey in the same school in 2002 found that proportion of overweight children had increased to 15.7%.⁸⁶ An increasing prevalence of overweight schoolchildren likewise has been documented in the Philippines. The prevalence of overweight schoolchildren has increased from 5.7% in 1989–1990 to 8.0% in 1993, and 8.8% in 1996. The rate of obesity was even higher among schoolchildren living in Metro Manila, rising from 9.7% in 1989 to 16.3% in 1996.⁸⁷

Urban-rural variations in the prevalence of unhealthy diets and physical inactivity observed in developing countries in the Region are reflected in the higher rates of overweight and obese men and women in urban areas compared with rural areas. In urban areas of Malaysia, for example, an estimated 5.6% men and 8.8% of women were obese, while obesity was found among 1.8% of men and 2.6% of women in rural areas. The proportion of adults who were overweight, calculated using data from the National Health Morbidity Survey, was 15.1% of men and 17.9% of women. Significant urban-rural differences were not noted.⁸⁸ The prevalence

of obesity is higher in urban than in rural areas of Fiji, Kiribati, Micronesia, Papua New Guinea, Vanuatu and Western Samoa.⁸⁹

As countries' GDPs rise and the modifiable risk factors for NCDs cluster among poor and marginalized communities in the Region, the prevalence of overweight and obese individuals could plausibly shift to these communities. A 1989 review of literature that examined socioeconomic status and obesity found a positive association between socioeconomic status and obesity in developing countries. However, a second review that focused on literature published after 1989 reported that the association between

socioeconomic status and obesity in the 14 studies examined appeared to be shifting, and that this pattern seemed to differ substantially by gender. Socioeconomic status and obesity was found to be significantly positively associated among men in seven studies, while the absence of such an association was noted in the remaining seven studies. For women, the inverse association between socioeconomic status and obesity was clearer: 10 studies reported a statistically significant inverse relationship, two studies found no association and two studies reported a positive association. The literature review concluded that obesity is no longer a disease of the affluent. As national income rises, the burden of obesity seems to shift towards groups with lower socioeconomic status, and this phenomenon seems to occur at an earlier stage of economic development among women than among men.⁹¹

Box 7: The association between mean population BMI, blood pressure and cholesterol, and economic development

To examine the relationship between the main risk factors for cardiovascular diseases—body mass index (BMI), blood pressure and cholesterol, and economic development—a study analysed data from more than 100 studies. Levels of economic development were estimated by three variables: national income, share of household expenditures on food, and proportion of the population living in urban areas.

Mean population BMI and cholesterol were found to increase rapidly with national income, then flatten and eventually decline. More specifically, BMI rose rapidly until national income reached 5,000 international dollars,⁹⁰ peaking for women when national income reached 12,500 international dollars and for men when it reached 17,000 international dollars. Cholesterol peaked at higher levels of national income (8,000 international dollars for women and 18,000 international dollars for men). An inverse association between BMI and cholesterol and share of household expenditure used for food was observed. Meanwhile, the association between BMI and cholesterol and the proportion of population living in urban areas was found to be positive. Mean population blood pressure seemed to lack any relationship with the three indicators for economic development. The study concludes that the risks factors for CVDs are occurring at a much earlier stage of economic development than previously believed.

Source: Ezzati *et al.* 2005.

A meta-analysis of national data sets from surveys carried out between 1992 and 2000 in 37 developing countries provides further evidence of the association between socioeconomic status (as measured by level of formal education) and obesity among women 20–49 years old. The analysis found a strong positive association between obesity among women and socioeconomic status in low-income countries, which shifts as national income rises. In lower-middle-income countries, an ambiguous pattern between obesity and socioeconomic status is found, while a significantly negative association between obesity and socioeconomic status is observed in upper-middle-income countries.⁹² Box 7 describes a similar relationship between economic development level and to of the risk factors for CVDs, namely BMI and cholesterol.

A few studies suggest that a similar pattern in the burden of obesity is beginning to emerge in developing countries in the Region. In Fiji, average BMI was reported to be significantly lower among women with some secondary education (27.1 kilograms per square metre) in comparison with those who had only primary education (30 kilograms per square metre).⁹³ In China, the prevalence of obesity is 19.6% in high-income groups and 10.9% in low-income groups. Over 8 years, however, the average prevalence of obesity

increased by 50%, while the prevalence in low-income groups increased by 70%.⁹⁴ An analysis of a cross-sectional population survey in Tiajian City, China, found that BMI among women was inversely associated with educational attainment and occupation. Among men, the survey showed that blue-collar workers were 2.89 times more likely to be obese than white-collar workers.⁹⁵

Raised blood pressure, raised blood glucose, abnormal blood lipids

Evidence from the Region on the distribution of the other intermediate risk factors for NCDs is less plentiful—especially evidence that is disaggregated by rural-urban location, socioeconomic status or other indicators of social exclusion. What is clear, though, is that raised blood pressure, raised blood glucose and abnormal blood lipids are increasingly prevalent in developing countries in the Region. The prevalence of hypertension, for example, exceeds

10% in 19 countries and areas in the Region.⁹⁶ In the Philippines, a recent national nutrition survey reported that 21% of all adults and 44.3% of adults over the age of 60 were hypertensive.⁹⁷ Further, hypertension was the fifth leading cause of morbidity in 2005.⁹⁸ Nearly a third of the population of a Rarotongan community, Cook Islands, was found to have high blood pressure in 2002.⁹⁹ The Viet Nam National Health Survey found that 16.9% of adults 25–69 years old were hypertensive in 2002.¹⁰⁰

Hypertension tends to be more prevalent in urban than in rural populations, according to studies from China and India. In India, for example, an estimated 27.3% of adults were hypertensive in urban areas, compared with 12.2% in rural areas.¹⁰¹ In Cambodia, the prevalence of hypertensive adults was found to be 25% in Kampong Cham Province and 12% in Siem Reap Province.¹⁰² A study in Malaysia reported that serum cholesterol levels were similarly higher in urban (210–230

Box 8: The distribution of risk factors for NCDs by urban-rural location and socioeconomic status

In 2001, a prevalence study using the World Health Organization's STEPS approach assessed the distribution of three preventable risk factors for noncommunicable diseases (NCD) in Purworejo district, Indonesia: tobacco use, being overweight or obese, and raised blood pressure. An asset index was constructed to assess the distribution of these risk factors by socioeconomic status.

The results of the study showed that the prevalence of tobacco use was high among men (53.9%) and almost negligible among women (1.7%). For the study population, the prevalence of raised blood pressure was similar for men (22.4%) and women (21.9%), while body mass index was higher among women than among men.

Disaggregating the data by urban-rural location in Purworejo district, as well as by socioeconomic status, revealed that smoking was most common in individuals from the poorest income quintile who resided in rural areas. In contrast, raised blood pressure and being overweight were found to be more common among those living in urban areas and those categorized as being in the richest quintile. Overall, the three risk factors clustered among individuals residing in urban areas—16.6% of those in the urban areas were found to have two or more risk factors, compared with 7.3% of those in the poorest quintile in the rural areas. However, the likelihood of individuals in the rural population experiencing multiple risk factors increased with socioeconomic status. This shows that tobacco use, raised blood pressure, and being overweight or obese are a growing burden for the rural population.

Various studies from Purworejo support this conclusion. According to the results of a cause-specific mortality study in 2000, the majority of male deaths were due to NCDs, especially heart disease, stroke and chronic pulmonary disease. A second study observed that smoking was more prevalent among adolescents in Purworejo district than among adolescents living in urban areas of Yogyakarta.

Source: Ng *et al.* 2006.

milligrams per decilitre) than rural areas (180–200) and among Aboriginals (150).¹⁰³ A recent study in a rural district in Viet Nam using the WHO STEPwise approach to surveillance (STEPS) suggests that the age-standardized prevalence of hypertension among adults 25–64 years old was 16.4% in 2002, an increase from 11.7% in 1996.¹⁰⁴ The results from 2002 showed that men were significantly more likely to be hypertensive than women (18.1% vs. 10.1%), and the prevalence of hypertension increased with age for both men and women.

Similarly, few analyses exist on the distribution of raised blood pressure, raised blood glucose and abnormal blood lipids by socioeconomic status or other indicators of poverty or social exclusion. In Tianjian, China, diastolic blood pressure among men was found to be inversely related to income and educational attainment. For women, systolic and diastolic blood pressures were inversely associated with educational attainment and occupation.¹⁰⁵ An adverse association between socioeconomic status (as measured by level of education) and hypertension likewise was observed in a rural district of Viet Nam. Men with less than a secondary school education were significantly more likely to be hypertensive than were men with high school or higher education. The prevalence of hypertension was found to be lower among farmers than people doing other jobs. Interestingly, when analysing the results according to income level, the study found that rich men and poor women were more likely to suffer from hypertension than people of the same gender with average living standards.¹⁰⁶ A 1998 case study in South Africa found that men and women 15 years old and above with little or no education tend to have higher blood pressure than those with more than 12 years of education—i.e., 20% men and 25% of women with no education were reported to have high blood pressure. In contrast, high blood pressure prevalence was only 12% for men and 9% for women with more than 12 years of education.¹⁰⁷

A study in Chennai, India estimated the prevalence of diabetes among individuals 40 years old and above. The study purposively sampled households from lower-income groups in the city (those living

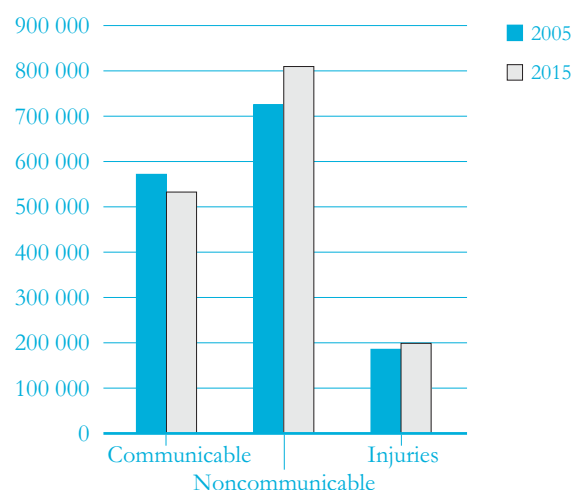
on less than 30,000 rupees a year, or approximately \$635) and households from higher-income groups (those living on more than 60,000 rupees per year, approximately \$1270) living in the same areas of the city.¹⁰⁸ While the age-standardized rate of diabetes was found to be significantly lower among those in the low-income group, diabetic complications were more common in this group. The study explained that the risk variables for complications (hyperglycaemia, dyslipidaemia and hypertension) were more common among individuals in the low-income group than among those in the high-income group. More specifically, the prevalence of hypertension was reported to be 53.7% in the low-income group, compared to 40% among those with high incomes.¹⁰⁹ Box 8 describes the results of a prevalence study of the risk factors for NCDs conducted in urban and rural areas of Indonesia.

The shifting burden of NCD-related morbidity

The burden of NCDs in developing countries in the Region

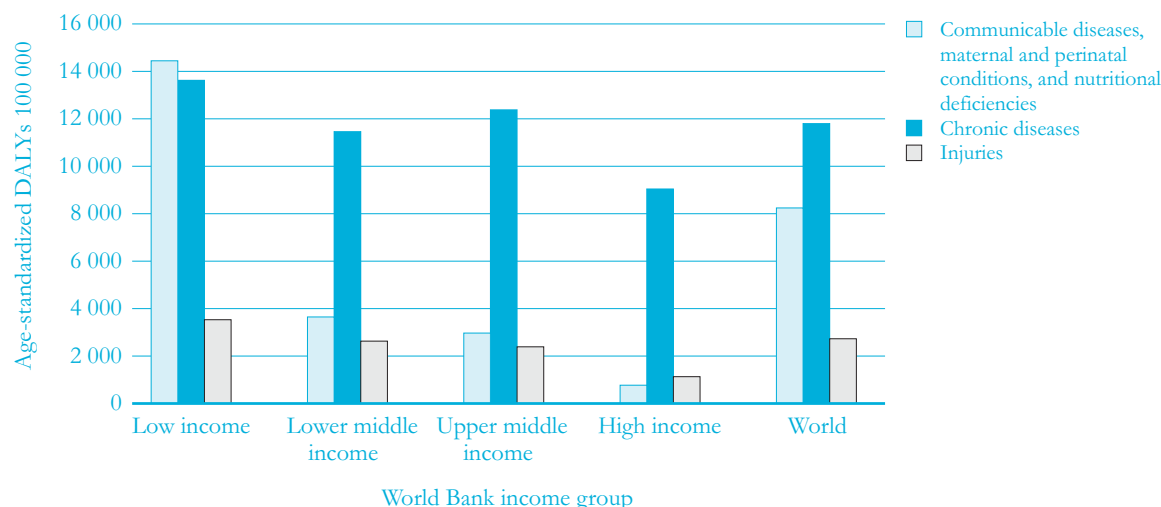
It is often argued that NCDs are found predominantly in industrialized countries and have yet to affect developing countries, where the burden of communicable diseases persists. Recent

Figure 4: Projected changes in the global burden of disease (DALYs '000)



Source: World Health Organization 2002c.

Figure 5: Projected main causes of the burden of disease for all ages, by level of development in 2005 (DALYs)



Source: World Health Organization 2005a.

data are beginning to paint a different picture, with 80% of the global burden of NCDs falling on low- and middle-income economies. An estimated 60% of cancer patients and 80% of people with disabilities reside in developing countries.¹¹⁰ In 2003, the burden of diseases in middle-income countries attributable to NCDs had exceeded 70%. Further, NCDs account for roughly 50% of the burden of disease in high-mortality regions, which tend to encompass low-income countries.¹¹¹ Mental health problems likewise have been found to contribute significantly to the burden of disease in developing countries.¹¹² This rising tide of NCDs in developing countries is concentrated among people 35–64 years old to a degree not witnessed in developed countries, which is cause for concern.¹¹³ Thus, NCDs are already a major health problem for adults in many low-income settings that face a double burden of disease—and the burden is likely to increase (Figure 4).¹¹⁴

A similar trend is discernible in the Region, where the growing burden of NCD morbidity in developing countries contributes significantly to the regional burden of NCDs. Figure 5 presents the main causes of the burden of disease, as measured by DALYs lost for all age groups in 2005, by level of development. NCDs contribute significantly to the burden of disease in low- and lower-middle-income countries, those with the lowest levels of development. This pattern is

mirrored in the Region, where 85% of the regional burden of NCDs falls on low- and middle-income countries.¹¹⁵ An estimated 75% of the 30 million people with diabetes and 90% of the 3.5 million new cancer cases each year in the Region occur in developing countries.¹¹⁶

Some case studies from developing countries throughout the Region support the regional-level data on the growing burden of NCDs in developing countries. NCDs are now responsible for roughly 70% of DALY loss in China.¹¹⁷ Mongolia likewise is experiencing high incidence of CVDs, cancer, injuries and mental health problems.¹¹⁸ The prevalence of diabetes now exceeds 8% in 13 countries in the Region; it is a particularly serious problem in the Pacific, where it is a major cause of blindness, renal failure and lower limb amputations. A survey of 4500 adults between 1992 and 1994 in the Federated States of Micronesia found that 12% were diabetic.¹¹⁹ The prevalence of diabetes is estimated to be 13.5% in Tonga and 28.1% in Nauru in 1994.¹²⁰ Diabetes is the fastest growing disease in the Solomon Islands.¹²¹

The distribution of NCD-related morbidity within countries

While the importance of NCDs in developing countries is clearly increasing, less evidence is

available on the distribution of NCD-related morbidity within countries. This is largely due to the dearth of data on NCDs from national health statistics systems, household-based surveys or case studies.

Some evidence suggests that NCDs are rising in rural areas in developing countries. In some cases, this increase appears to be more rapid than in urban areas. Among adults 20–65 years old in Luzon, Philippines, the prevalence of diabetes mellitus was found to be 5.1% in 2000. This represents an increase of almost 55% from when the prevalence for a similar population was estimated to be 3.3% in 1982. Further, the 2000 study reported that the prevalence of diabetes mellitus was similar in rural and urban areas. In comparison, urban areas were reported to have prevalence levels three times higher than that in rural areas in 1982.¹²² This suggests that diabetes mellitus is increasing more quickly in rural than in urban areas of the Philippines. The prevalence of diabetes in rural areas of Cambodia was also found to be higher than initially expected. The study surveyed two rural villages in Siem Reap Province, where the economic conditions were generally poor, and two villages in Kampong Cham Province, where the economic conditions are better. Based on the results of the two surveys, conducted during January and June 2004, the prevalence of diabetes was calculated to be 5% at Siem Reap and 11% at Kampong Cham.¹²³ Disabilities in the Solomon Islands seem to be concentrated largely in rural communities, with an estimated 90% of those with disabilities living in rural areas in 1991–1992. A subsequent survey from 1999 noted that the distribution of disabilities varied among provinces—ranging from 5.6% in Rennell–Bellona, a remote island, to 1.9% in Honiara, where the capital is located.¹²⁴

Some evidence from China suggests an association between morbidity due to NCDs and indicators of poverty. The results of a survey conducted in six townships in Guizhou and Shangxi provinces showed that, in these relatively poor provinces of China, 35.1% of households reported having a family member diagnosed with an NCD. In the study population, the head of a household with a member diagnosed with an NCD was less likely to

have higher education than the head of a household without a member diagnosed with an NCD.¹²⁵ In India, the prevalence of cervical cancer has been found to be higher among poor and rural women than those who are better-off and live in urban areas.¹²⁶

A study examined the effect of socioeconomic factors on functional status decline from 1997 to 2000 among Chinese 55 years old and above. The study, using data from a nationally representative survey, measured a decline in functional status in terms of limitations in activities of daily living (ADL) by assessing an individual's ability to bathe, eat, dress and groom oneself, transfer, walk across a small room, and go to the toilet. A second measure of mobility and instrumental activities of daily living (IADL) assessed an individual's ability to shop, cook, use public transportation, manage money and use the telephone. Controlling for age and sex, individuals in the lowest third of the income distribution were reported to face the greatest risk to IADL and decline in functional status. Similarly, a person's level of educational attainment and rural residence were found to be strongly and inversely related to an increase in the risk of IADL.¹²⁷

Inequalities in access to health care for NCDs

Developed countries have shown that effective interventions to tackle the burden of NCDs exist. Australia, Canada, Japan, the United Kingdom and the United States have reduced substantially the burden of NCDs over the past three decades. In these countries, death rates from heart diseases have fallen by as much as 70% during this period.¹²⁸ Yet deaths from heart disease and lung cancer occur at comparatively earlier ages on average in developing countries than in developed countries, because effective treatment is not widely available and prevention has not been prioritized. Cancer patients in developing countries tend to seek care from health services when they are already incurable; only 20% of patients are diagnosed at an early stage. This is in contrast to developed countries where 80% of patients with cancer of breast, cervix and mouth are diagnosed in the early stages. Most Filipino cancer patients seek medical care only when symptomatic or at an advanced

stage. Of those newly diagnosed with cancer, one of two will die within the year.¹²⁹ Estimates from Tonga suggest that the overall rate of undiagnosed diabetes is 13%.¹³⁰ Based on evidence from rural Viet Nam, few people with hypertension receive appropriate treatment. Of those who were found to be hypertensive and were aware of their condition, only 3.5% of men and 2.9% of women were being treated.¹³¹ A breast cancer study in two urban hospitals in Malaysia observed that women presenting at the hospital that served lower socioeconomic groups were more likely to present with larger tumours at a later stage than were women presenting at the hospital that served a more affluent area. At the first hospital, 50%–60% of newly diagnosed breast cancers were stage three or stage four, compared with 30%–40% at the second hospital.¹³²

Indeed, inequalities in access to prevention, diagnosis, care and treatment for NCDs are one of the factors driving the epidemiological transition within countries. Better-off populations tend to have earlier access to effective prevention and treatment services than poorer populations. As the epidemic of NCDs progresses, better-off individuals adapt their lifestyles to reduce their exposure to the risk factors for NCDs, thereby lowering the prevalence of NCDs in this community. At the same time, they tend to enjoy access to higher quality treatment for NCD morbidity, which improves their rate of survival. In contrast, poorer populations tend to have less access to the health information and other preventive measures that aim to reduce exposure to the risk factors for NCDs. Further, poor households and communities often have less access to quality health care services than do those that are better-off. This decreases the likelihood that NCDs will be diagnosed at an early stage and treated adequately.

Inequalities in access to prevention, diagnosis and treatment for NCDs might arise from financial and nonfinancial barriers. Separately and together, these barriers can delay or prevent the poor from accessing health care services. These barriers—geographical, economic, information and knowledge, and sociocultural—are considered below.

Table 6: Share of public health spending received by households in the poorest and richest income quintiles (%)

Country	Poorest quintile	Richest quintile
Malaysia, 1989	29	11
Viet Nam, 1992	12	29

Source: Hsiao and Liu in Evans *et al.*, eds. 2001.

Geographical barriers

The availability of health services depends on the adequacy and appropriate allocation of financial resources. In developing countries, the poorest 20% of the population typically receives less than 20% of the benefits from public health spending (Table 6).¹³³ Better-off households tend to capture government subsidies for health care. These, in turn, are often allocated to supporting hospital-based curative services in urban centres, leaving primary health services and other health interventions for the poor underfunded.

This is especially problematic for the poor, who are often concentrated in rural areas. In Vanuatu, for example, almost three quarters of the health budget in 1996 was allocated to urban rather than rural services. As a result, only 20% of the population benefited from public spending on health services.¹³⁴ In Cambodia, 13% of government staff is placed in rural areas, though they serve 85% of the Cambodian population.¹³⁵ The rural population in Mongolia uses health facilities only half as often as the urban population.¹³⁶ Part of the reason might be the ratio of physicians and nurses to population in 2002, which ranged from 1:206 and 1:393, respectively, in Ulaanbaatar to 1:794 and 1:502, respectively, in Zavhan.¹³⁷

Due to the incomplete coverage of services in areas populated by the poor, when the poor fall ill, they must travel longer and farther to health care facilities than the non-poor, increasing the overall cost of seeking care.¹³⁸ This might be a constraint particularly for the prevention and treatment of NCDs in developing countries, since the coverage of effective measures for the prevention and treatment of NCDs remains limited.¹³⁹ In general,

few population-wide preventative interventions for NCDs are available.¹⁴⁰ For example, state-subsidized treatment of NCDs in India is concentrated largely in urban areas. Facilities for acute and long-term care of NCDs are inadequate in rural primary-care settings, and even in secondary-care settings of smaller towns and cities.¹⁴¹

Even in urban areas, the poor or otherwise socially excluded groups might face barriers to access to services. A study analyzing changes in access to outpatient and inpatient health care services in urban areas of China between 1992 and 1998 reported increasing inequalities in access to health care services. While self-reported illness during the two weeks before the survey in 1998 showed little difference, people in the lowest income group were less likely to visit a health care facility than were those in the highest income group. Among the respondents who reported difficulties in accessing health services, lower income was found to be associated with a greater likelihood of financial difficulties being reported as a major constraint to seeking care from a doctor. The study also reported that, among respondents who were referred by a health provider to hospital services, 44% of respondents in the lowest income group did not receive inpatient service in 1998, compared to 23% in the highest income group. When explaining why they did not go to the hospital when referred by a health provider, 65% of respondents noted financial difficulties as the main obstacle. This proportion increased to 86% of those in the lowest income group.¹⁴² These trends have important implications for health seeking for NCDs, because of the rising burden in urban areas of China.

Economic barriers

The cost of seeking care can be broken down into direct costs (e.g., user fees and medication), indirect costs (e.g., transportation and food) and opportunity cost (e.g., time away from work). When health services are available, these costs might delay or deter many poor households from seeking adequate health care. Although the direct and indirect costs of seeking care might be lower for poor than non-poor households, these costs as a share of non-food expenditure are relatively

higher for poor households than for non-poor ones. The opportunity cost of seeking care is likewise greater for poor than non-poor households. Poor households usually earn income from the labour of their members. Any reduction in labour supply or decrease in productivity due to periods of illness results directly in a decrease in income. This can be especially true when the breadwinner falls ill. Limited savings and a general lack of health insurance further constrain the ability of poor households to meet the direct and indirect costs of seeking care, and tend to magnify the impact of the opportunity cost of illness.

Studies from various countries in the Region suggest the magnitude of these costs for poor households. In 1998, the average user charge per admission for inpatient care in a public hospital in Viet Nam was estimated at 45% of the poorest quintile's average non-food expenditure, compared to 4% for the richest quintile.¹⁴³ In Mongolia, estimates from the 1998 Livelihood Measurement Survey found that poor households spent 3% and non-poor 2% of their income on medical and pharmaceutical costs.¹⁴⁴

While these studies describe the costs of seeking health care in general—and, thus, are not specific to careseeking for NCDs—they provide some indication of how the economic costs of seeking care can reduce access to health services for poor households. The consequence of these costs is illustrated by a case study in three poor rural counties in China, which found that financial difficulties prevented 41% of sick peasants from seeking medical treatment.¹⁴⁵

The direct costs of treatment for NCDs tend to be higher than those for communicable, maternal and perinatal conditions, because the costs of medicine are higher than those for other diseases. Moreover, treatment and care often are provided over a longer time (often the remaining years of the patient's life). For example, a study from China notes that the price of weekly doses for simvastatina (a medicine for CVD), expressed as a kilogram of the cheapest crop available, is 50.6. In comparison, the cost of aspirin is 1.5.¹⁴⁶ The Commission on Intellectual Property Rights, Innovation and Public Health has reported a gap

between the price and availability of medicines to treat NCDs and demand for these drugs in developing countries.¹⁴⁷

If treatment and care for NCDs must be sought in urban-based hospitals, the indirect costs of seeking care for NCDs likewise might be greater than those for other conditions. In Chennai, India, the average cost of treatment for type 1 diabetes was reported to be 13,890 rupees (about \$310) annually. This accounted for an estimated 22% of the average annual household income of the sample population. For those with high household income (above 120,000 rupees per year), the cost of treatment was equivalent to 12% of annual household income. This proportion increased to 59% for those with low household income (less than 18,000 rupees per year).¹⁴⁸ A study from Bavi, Viet Nam, estimated the average total cost per injuries to be VND 198,685 (\$13.70). Health care costs accounted for 50% of the total costs, transportation 2% and indirect costs (such as time lost) 48%. An estimated 79% of health care costs were paid out of pocket.¹⁴⁹ As a result, many poor patients are forced to delay seeking treatment, which further reduces their capacity to work. Economic factors were identified as a significant determinant of late-stage diagnosis of breast cancer among patients in the Philippines in 1993.¹⁵⁰

Information and knowledge barriers

Poor education and knowledge about health conditions have been found to reduce demand for preventive and curative health care services.¹⁵¹ Evidence suggests a generally low level of awareness among people in developing countries about the risk factors for NCD, these conditions, and possible preventive and curative measures. A series of case studies on breast and cervical cancer from Metro Manila, Philippines, illustrate this low level of knowledge. The results of the 1989 knowledge, attitude and practice survey on women's health and child care shows that roughly 50% of women in Metro Manila had heard of or read about breast examination, and 37% had received a breast examination from a physician. In the study population, 61% had heard or read about the Pap smear, though only 37% of respondents had ever had one. Among those who had not had a

Pap smear, only 27% considered having one and only 20% had received advice from a health practitioner about the importance of having a smear. As reasons for not having a Pap smear, women said they were too busy, unmarried, afraid, too young, ashamed, not symptomatic, and unaware.¹⁵² Another study, on the determinants of late-stage diagnosis of breast cancer in Filipino patients, suggests that many women were diagnosed late because they were not aware of the gravity of breast cancer and were scared of being diagnosed.¹⁵³ Women in Metro Manila also said they did not comply with treatment for breast cancer, because they were unaware of the gravity of the disease, scared, and indifferent toward the disease.¹⁵⁴ The study in Bavi district, Viet Nam, reported that only 17.4% of respondents who were found to be hypertensive were aware of their status.¹⁵⁵

Several studies have found that knowledge and awareness of health issues are correlated with income. Other studies indicate that better-off individuals are more likely to use health-related information to reduce their exposure to the risks factors of NCDs than are poor individuals.¹⁵⁶ For example, education has been found to be strongly negatively associated with tobacco consumption, suggesting that people with lower levels of education are less aware of the health hazards of tobacco use.¹⁵⁷ Two studies from India have demonstrated that knowledge of NCDs is associated with higher levels of educational attainment. The first, a population-based survey in Chennai, found that 75.5% of the study population were aware of a health condition called diabetes. An estimated 22% of the study population and 41% of respondents with diabetes knew that diabetes is preventable. Few respondents were aware of the risk factors for diabetes, and only 19% knew that diabetes causes complications. Knowledge about diabetes, and particularly the prevention of diabetes, was reported to increase with education level.¹⁵⁸ Based on evidence from an urban slum in New Delhi, India, the second study reported that only 12.5% of respondents were aware that a Pap smear test could diagnose cervical cancer in 2002. An analysis of the results showed that higher education was the only factor positively associated with correct

knowledge and positive help-seeking behaviour in the study population. Interestingly, 75.2% of the study population knew that cancer treatment was provided in tertiary care facilities. However, far fewer (24.1%) were aware that cancer detection, diagnosis and some treatment also were performed in secondary care facilities.¹⁵⁹

A 2005 study in Cambodia reported that 67% of the people diagnosed with diabetes were unaware of their condition. Such lack of knowledge of their condition was found to be more common in the poorer communities than in better-off ones. The study noted that this pattern mirrors findings from other developing countries.¹⁶⁰ Low levels of education and knowledge might prevent poor individuals from accessing diagnostic and curative services for NCDs. The important role of literacy and knowledge has been highlighted with respect to diabetes, because they contribute greatly to the capacity for self-treatment.¹⁶¹

Sociocultural barriers

Less evidence is available on the ways sociocultural barriers might reduce access to prevention, diagnosis and treatment for NCDs in the Region. Some evidence seems to suggest that poor people are less likely to accept health-promoting behaviours than more affluent members of a society.¹⁶² In Malaysia, a study explored perceptions of diabetes among Chinese individuals with type 2 diabetes in urban and rural areas. Of the study population, 77% reported less than 6 years of formal education. The study reported that the perceived seriousness of one's diabetes, and perceived susceptibility of an individual with type 2 diabetes to complications, increased with level of education. A similarly significant positive association between level of education and complication-preventive behaviour was also observed. Urban-rural differences were not reported.¹⁶³

Sociocultural beliefs might also influence people's understanding of the risk factors for NCDs, and thus their exposure. For example, culturally specific notions of beauty have been found to influence rates of obesity in the Region. In Fiji, robust bodies are traditionally considered

aesthetically pleasing.¹⁶⁴ Likewise, sociocultural beliefs regarding notions of illness and health might influence health-seeking behaviour.

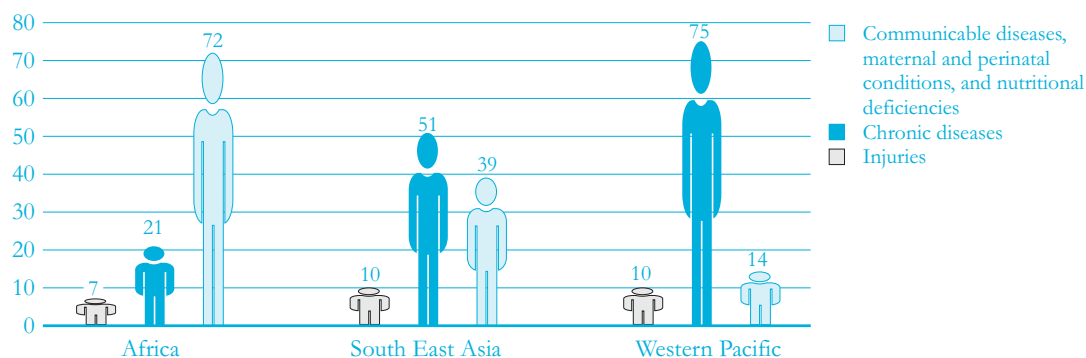
Inequalities in quality of care for NCDs

Even where health services are accessible in terms of distance or affordability, they might not respond effectively to the needs of poor patients. Evidence from many countries has shown that the (perceived or actual) quality of health care¹⁶⁵ tends to be substandard, particularly in health facilities in underserved areas. Many health facilities are neglected or dilapidated, and lack supplies, equipment and essential medicines. Health centres in Cambodia have been described as being in a dismal state, with no electricity, and limited supply of essential medicines and other products.¹⁶⁶ In Mongolia, health service providers in rural areas often lack essential supplies, such as transportation and medicines.¹⁶⁷

Public health services likewise often tend to be characterized by long waits, inconvenient hours, rude or disrespectful staff, and an overall poor quality of care.¹⁶⁸ The generally low remuneration for health staff in underserved areas can result in poor quality services, absenteeism and many vacancies. In Mongolia, rural health service providers rarely benefit from in-service training.¹⁶⁹ A study from 2003 indicates that absentee rates among public facility health workers reached 19% in Papua New Guinea.¹⁷⁰ Some evidence suggests that health service providers are not sufficiently aware of, or sensitive to, the needs and preferences of the poor.¹⁷¹ In many instances, the poor quality of services requires poor individuals to make repeated visits to multiple health providers. In China, for example, much of the cost of seeking care can go to unnecessary or inappropriate drugs.¹⁷²

Little evidence is available from the Region on how the generally poor quality of health care services affects diagnosis and treatment for NCDs specifically. The availability of medication and other treatments required for the treatment of NCDs might be irregular.¹⁷³ A study from Cambodia noted that few of the people in the study population with known diabetes were treated with insulin. Disaggregating the study population

Figure 6: Distribution of deaths by cause, selected regions, 2002 (%)



Source: World Health Organization Regional Office for the Western Pacific.

further revealed that none of the respondents from Siem Reap (the poorer area) received insulin, while 5% of the study population in Kampong Cham (the better-off area) received insulin.¹⁷⁴ In Mongolia, the quality of care for diabetes and hypertension patients was found to be substandard.¹⁷⁵ The study reported that the mean glycated haemoglobin in the study population was 9.1%, reflecting the general poor control of blood glucose among Mongolian diabetics. Little control of blood pressure also was documented, as the mean blood pressure was found to be 144/93 millimeters of mercury (mmHg). The study concluded that little evidence existed of effective control of NCDs in Mongolia. A study analyzing data collected from the Tianjin Cancer Registry in China for 1981–2000 found that people with liver cancer that were diagnosed in city hospitals had a higher rate of survival than people diagnosed in district or community hospitals.¹⁷⁶

Shifting burden of NCD mortality

Roughly 80% of deaths due to NCDs occur in developing countries.¹⁷⁷ Twice as many deaths from CVDs now occur in developing countries as in developed countries.¹⁷⁸ The incidence of coronary heart attack is also rising in developing countries, where the likelihood of mortality after a heart attack is higher than in developed countries.¹⁷⁹ Furthermore, recent studies highlight the high mortality rate for NCDs in developing countries.¹⁸⁰

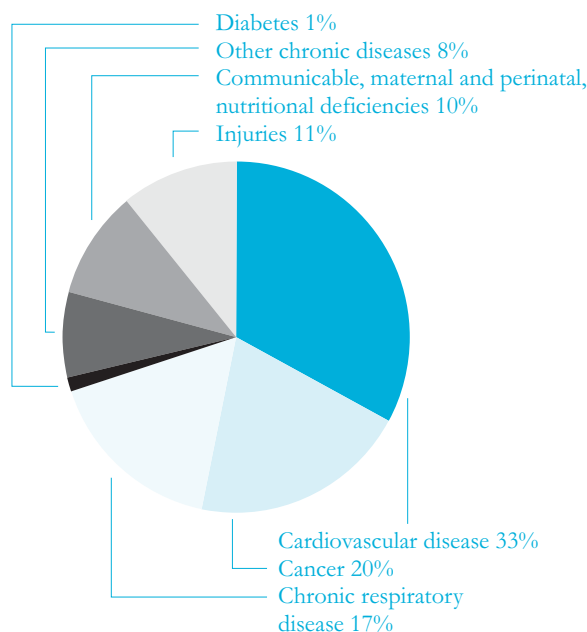
An estimated three of every four deaths in the Region are caused by NCDs (Figure 6).¹⁸¹ CVDs

are the leading cause of death in 32 of the 37 countries and areas in the Region, while cancer is among the top five causes of death in 26. An estimated 12% of the deaths in the Region in 1998 were due to chronic obstructive pulmonary disease, the majority of which occurred in rural areas.¹⁸² Suicide was the leading cause of death from injuries in 2000. The crude suicide rate in the Region was estimated to be 19.3 deaths per 100,000 persons, as compared with 14 per 100,000 globally.¹⁸³

NCDs often are assumed to attack people in their old age, sparing children and adults during their productive years.¹⁸⁴ However, evidence from developing countries in the Region shows that the NCD death rate is highest among people 30–69 years old. Among people 40–64 years old in China, malignant neoplasm causes an estimated 265.9 deaths per 100,000 person-years, cerebrovascular disease 171.5, and diseases of the heart 159.1. These prevalence rates are higher than those found among people 40–64 years old in developed countries.¹⁸⁵ Generally, CVDs and diabetes hit the most economically productive age groups (26–64 years) the hardest.¹⁸⁶ Deaths from NCDs are occurring at a younger age among adults in these countries than among adults in industrialized countries, which has significant implications for economic growth and poverty reduction.

In Mongolia, CVDs and cancer caused more than 58% of all deaths.¹⁸⁷ More than 50% of deaths in Fiji are attributable to NCDs, while this proportion rises to 79% in China.¹⁸⁸ Figure 7 presents the projected deaths by cause for all ages

Figure 7: Projected deaths by cause, all ages, China, 2005



Source: World Health Organization 2005a.

in China for 2005. NCDs are the leading cause of mortality in the Philippines.¹⁸⁹ Based on data from 1996, circulatory system diseases accounted for an estimated 30% of deaths in the Philippines.¹⁹⁰ An analysis of hospital statistics found that NCDs caused an estimated 62% of deaths in Viet Nam in 1997.¹⁹¹ A community-based study from 1999 to 2003 in Bavi, a rural district in northern Viet Nam, found that NCDs accounted for 67% of mortality among men and 61% among women. CVDs were the leading cause of mortality, accounting for 33% of mortality among men and 31% among women. Cancer accounted for 17% of deaths among men and 14% among women, while other NCDs, including chronic obstructive lung disease, kidney failure and cirrhosis, caused 17% of deaths among men and 16% among women.¹⁹² CVDs caused 43.8% of deaths among individuals aged 36–69 years old in Bavi.¹⁹³ In the sample population, the NCD mortality rate was found to increase with age.¹⁹⁴

The growing burden of risk factors for NCDs in developing countries in the Region, together with increased morbidity and inequalities in access to quality health services for NCDs, suggests that the

burden of mortality will begin to shift from more affluent populations to lower-income households and communities as the NCD epidemic progresses. Yet evidence is generally still lacking on the distribution of NCDs by socioeconomic status or other indicators of social exclusion. A community-based study from Viet Nam observed higher CVD mortality among individuals who were less educated than among those with higher levels of education. Overall, the death rates from CVDs were similar among poor and rich individuals.¹⁹⁵ Further analysis showed that the NCD mortality decreased with education, which the study used as a proxy for individual socioeconomic status. More specifically, lack of formal education, being a man and being 50 years old and above were found to be significantly associated with NCD mortality. The study also found an important interaction between age and education. The risk of dying from CVDs was 7 times higher among individuals 20–49 years old with no formal education than individuals of the same age group with formal education. Again compared to individuals 20–49 years old with a formal education, the risk of dying from CVDs was 14 times higher for those 50 years old and above with a formal education. The risk of dying from CVDs for those 50 years old and above with no formal education was 61 times higher than that for the reference population.¹⁹⁶ Little variance has been found between the stroke rates in urban and rural areas of China.¹⁹⁷

The effect of noncommunicable diseases on poverty

The consequences of ill health increasingly are understood to be an important cause of impoverishment for many poor households.¹⁹⁸ In a series of consultations with poor individuals, ill health was seen leading to greater poverty, while good health was viewed as a key to ensuring higher productivity and increased income.¹⁹⁹

Evidence from various countries in the Region illustrates the impoverishing impact ill health has upon households. In Mongolia, serious disease forced an estimated 15% of households to the brink of poverty or into poverty in ²⁰⁰ Lack of labour and disease or injury was also found to be

the major source of impoverishment for poor rural households in China. As a lack of labour can arise from illness or injury, ill health might be a key reason for the impoverishment of rural households in China.²⁰¹ While this evidence reflects the impact of ill health in general, the impoverishing effect NCDs have on households might be substantial. NCDs usually are concentrated among economically productive adults (36–64 years old), and care tends to be costly. Further, the often long-term nature of NCDs places a greater burden of care and treatment upon households than other types of ill health.

The direct and indirect costs of seeking medical care weigh more heavily on the poor than on the non-poor. A case study from six poor rural districts in China found that household expenditures on food, farming, smoking and drinking, tuition, and social activities declined when households had a member who had been hospitalized or diagnosed with an NCD. Assuming a causal relationship between health expenditure and other household consumption, a 100 yuan increase in health spending was found to decrease spending on food by 14 yuan. The impact of increased health spending was greater among poor households, where an increase of 100 yuan in health expenditure translated into a decline of 29.6 yuan on food, 17.3 yuan on farming, 15.9 yuan on smoking and drinking, 14.4 yuan on tuition, and 8.7 yuan on social activities. In comparison, households with high income experienced negligible changes in consumption of other goods when spending on health services increased.²⁰² In the Republic of Korea, caregivers for cancer patients who were married, had low income, were in poor health, paid higher medical expenses, cared for a cancer patient with little improvements in health status, or required more lengthy care were more likely to deplete their family savings than other caregivers.²⁰³ Hospitalization in Cambodia might cost as much as 88% of an average household's annual non-food budget.²⁰⁴

A study from India examined how the use of tobacco and alcohol affected the proportion of households that resorted to borrowing or selling assets to meet medical expenses, and what

percentage of the total cost of hospitalization was financed in this manner, from 1995 to 1996. The proportion of households that had to borrow money or sell assets during hospitalization was reported to be 47% for individuals using tobacco and alcohol; 44% for individuals using tobacco; 42% for individuals who were non-users of tobacco and alcohol, but lived in a household where tobacco and alcohol were used; and 32% for individuals in other households. The likelihood of borrowing money or selling assets to finance hospitalization increased if the hospitalized individual was rural, male, 25–39 years old, head of the household, uneducated and from the poorest expenditure quintile. The proportion of total hospital expenditure financed in this way ranged from 28% for individuals who used tobacco and alcohol to 19% for non-using individuals dwelling in tobacco- and alcohol-free households. The percentage of total hospital expenses financed through borrowing or distress sale was found to increase if the hospitalized individual was a rural, male, 25–39 years old or uneducated.²⁰⁵

The impact of medical costs have been found to be especially severe if poor families are forced to finance health care by selling productive assets, such as livestock or land, or take children out of school. For example, a study in Cambodia observed that 40% of new landlessness was due to ill health.²⁰⁶

Because the poor have few other assets, their livelihood is derived mainly from their labour. Any reduction in labour supply or decline in productivity of the poor due to periods of illness directly decreases individual and family income. The study from India alludes to the opportunity cost of labour lost due to illness with NCDs. Financing hospitalization through borrowing or selling assets increased if the hospitalized individual was male and 25–39 years old. Income earned from wage labour is likely to be higher for men of this age than for women of the same age, or for men who are older or younger. Domestic violence perpetuates the poverty of women by reducing their opportunities for work outside the household, their ability to care for themselves and their children, their mobility and access to information and children's schooling.²⁰⁷

The negative effects of ill health on households are often passed to the next generation. Health care costs and interest on private loans have been identified as two of the most important reasons for intergenerational poverty.²⁰⁸

Evidence is mounting regarding the impact of a higher burden of disease, slower economic growth and decreased poverty reduction at the level of countries or societies. When aggregated to the national level, the costs of NCDs to individual households outlined above could be staggering. In

particular, the concentration of NCDs among economically productive adults has important implications for national-level economic growth and development. Clear evidence of the impact of NCDs at the national level comes from China. CVD among people 35–64 years old reduced productive life by an estimated 6.7 million years during 2000, costing China an estimated \$30 billion. Only a quarter of this cost was direct health care costs; the remaining costs came from lost productivity. Other estimates show that the country lost roughly \$18 billion in national income

Box 9: Gender, sex and noncommunicable diseases—the case of lung cancer

Across countries, men and women tend to be responsible for different social and economic activities. As such, their access to resources and decision-making authority differs. Locally constructed gender norms determine the roles and responsibilities assigned to men and women. Gender refers to the socially constructed roles, behaviours, activities and attributes that a society ascribes as masculine or feminine. Gender differs from the biologically determined characteristics of men and women, or those based on sex. Because gender roles are socially constructed, they might vary across localities and often change over time. The ways men and women experience gender roles also might differ across socioeconomic status and other categories of social exclusion, such as among ethnic minorities.

Gender norms shape the way men and women experience poverty. Worldwide, women in particular carry a double burden—i.e., they combine productive and reproductive activities, such as childrearing and other household duties. In addition, women often have less control than men over means of production, such as cash, collateral and credit; and enjoy less access to education, skills, jobs and political representation. Approximately two thirds of the illiterate adult population are women. Within the household, a skewed distribution of resources and power often disadvantage women further.

Local notions of masculinity and femininity shape the economic and productive capabilities of men and women, as well as their respective social roles, responsibilities, activities and behaviours. These, in turn, might influence the exposure of men and women to the risk factors for NCDs, their access to prevention for NCDs, and their treatment-seeking behaviour.

Debate continues on what share of the differences between men and women regarding NCDs can be explained by biological differences and what share arise from gender-related factors. For example, a growing body of research provides insights into the complex relationship between sex, gender and lung cancer. However, much remains unclear about the relative roles of sex and gender, and the ways they might combine to increase the risk of lung cancer among men or women.

A recent meta-analysis suggests that women might be more vulnerable to the effects of smoking than men. Specifically, women develop lung cancer with lower levels of smoking compared to men. Further, women are at greater risk of developing the more aggressive small cell lung cancer, of which adenocarcinoma is more common. Estimates suggest that women who smoke three to five cigarettes per day might double their risk of lung cancer, while men must smoke six to nine cigarettes per day to double their risk. While these results remain contested, efforts to explain women's greater vulnerability to the effects of smoking have focused on women's greater tendency to smoke low-tar cigarettes, and to inhale deeper and smoke faster than men. Biology, specifically women's sex hormones and reproductive status, also might play an important role.

Sources: Mackay and Mensah 2005; Morrow 2003b; Payne 2005.

in 2005 from the effects of heart disease, stroke and diabetes on labour supplies and savings. These losses are expected to increase over time. Over the next 10 years, China could lose up to \$558 billion from premature deaths due to heart disease, stroke and diabetes.²⁰⁹ Unless halted and reversed, this trend has the potential to severely hinder social and economic development.

The relationship between gender and noncommunicable disease

Gender-related exposure to the risk factors for noncommunicable diseases

As discussed above, NCDs affecting adults arise from behaviours learned and experiences accrued in earlier years. Exposure to the risk factors for NCDs also accumulates throughout the life course. The differences between men and women in the rates, trends and specific types of NCDs stem, in part, from how gender shapes men's and women's roles, responsibilities, activities and behaviours that determine their exposure to the risk factors for NCDs. However, the relationship between sex, gender and NCDs is complex and not fully understood (Box 9).²¹⁰ Because of a general lack of sex-disaggregated data on NCDs from developing countries in the Region, little is known about the ways gender might affect men's and women's experiences with NCDs differently.

Currently, rates of cancer mortality are 30%–50% higher among men than among women. This is largely attributed to the higher rates of lung cancer among men. In seeking to understand why men are more likely to suffer from lung cancer, much attention has been devoted to trends in smoking, which has traditionally been a more male behaviour in many countries in the Region.

Smoking tends to be more prevalent among men than among women in most developing countries. The overall prevalence of tobacco use is four times higher among men (48%) than among women (12%). For the Region, male smoking prevalence was estimated at 62.3%, while the female rate was roughly 4%.²¹¹ Table 7 presents the prevalence of smoking among men and women in selected countries in the Region. As this trend has

been demonstrated repeatedly in most countries, being born male is arguably the greatest predictor for tobacco use in the Region.²¹²

Significant gender-related differences likewise have been observed among students who smoke. In Malaysia, 53.6% of male students had ever smoked, compared to 11.4% of female students. The prevalence of smoking among male students was found to be six times higher than that among female students in Tuyen Quan Province, Viet Nam. In urban areas of the country, this gap has narrowed to between 1.5–3 times higher for men.²¹³ In contrast, the prevalence of ever smoking among students in the Cook Islands was observed to be similar for males and females.²¹⁴

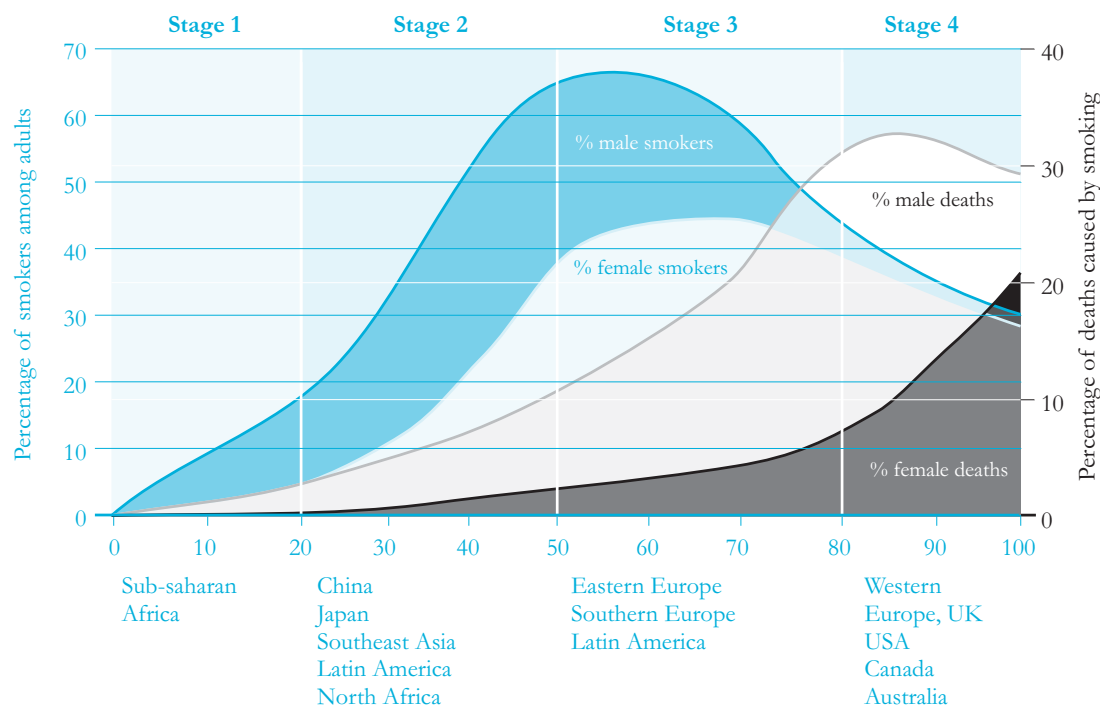
In a national survey in Viet Nam, the main reason women rejected smoking was the belief that “women shouldn't smoke.” Of the women 15–42 years old surveyed in Ho Chi Minh City, more than three quarters (76%) identified social disapproval as the main cause of the low female smoking prevalence, while 20% identified health concerns as the main cause.²¹⁵ Nevertheless, older, uneducated women in rural areas of the country have traditionally used hand-rolled cigarettes or chewing tobacco.²¹⁶ Women in the Philippines have expressed emotional dependence on tobacco during life difficulties, and described smoking “as a substitute for expressing feelings, particularly anger and unhappiness.” Meanwhile, women in Viet Nam explained that they might initiate smoking if they become “very unhappy.”²¹⁷ An association between mental disorders and smoking has also been identified. The greater

Table 7: Prevalence of smoking among men and women in selected countries in the Region (%)

Country	Male rates	Female rates
China	66.9	4.2
Lao PDR	41.0	15.0
Malaysia	41.0	4.0
Philippines	53.8	12.6
Singapore	26.9	3.1
Viet Nam	50.0	3.4

Source: WHO, 2000a; Dans *et al.* in Morrow 2003b.

Figure 8: The four stages of the continuum of tobacco use in countries



Source: Esson and Leeder 2005.

likelihood that women will suffer from mental disorders than men is likely to influence the prevalence of smoking among women.²¹⁸ Conversely, smoking has been identified as an integral aspect of male social behaviour in Viet Nam. For example, offering cigarettes has become a common courtesy among men.²¹⁹ The exchange of cigarettes serves a similarly important social function among men of all ethnic groups in Malaysia.²²⁰

Despite the role social norms have traditionally played in limiting smoking prevalence among women in many countries in the Region, an increasing proportion of women are taking up smoking. A random sample survey of women 15–24 years old in Ho Chi Minh City, Viet Nam, showed that 20% have tried at least one puff of a cigarette and 6.3% smoked regularly in 2000. This is substantially higher than the rate of 1% reported among women 18–25 years old just 3 years earlier.²²¹ The rate of smoking is also growing among women in China and India.²²² Tobacco companies have harnessed prevailing gender norms in their advertising. For example, tobacco

advertising has used images of slimness, sophistication, liberation and autonomy to target women.²²³

The consistency with which gender differentials in smoking prevalence have been observed across countries has made them an integral aspect of WHO's stages on the continuum of tobacco use in countries.²²⁴ The continuum identifies four stages of tobacco use: low (<20%) male and minimal female prevalence; high (>50%) male and rising female prevalence; sharp declines among men, gradual declines in women; and, further declines in both, with peaks in tobacco-related deaths. These stages are illustrated in Figure 8.

Although smoking is a critical determinant of the varying rates of lung cancer among men and women, smoking does not account for the entire gender difference.²²⁵ Other determinants include exposure to environmental tobacco smoke, fumes and smoke from certain cooking fuels, environmental pollutants, and employment-related risks in some industrial settings. Exposure to environmental tobacco smoke seems to be a

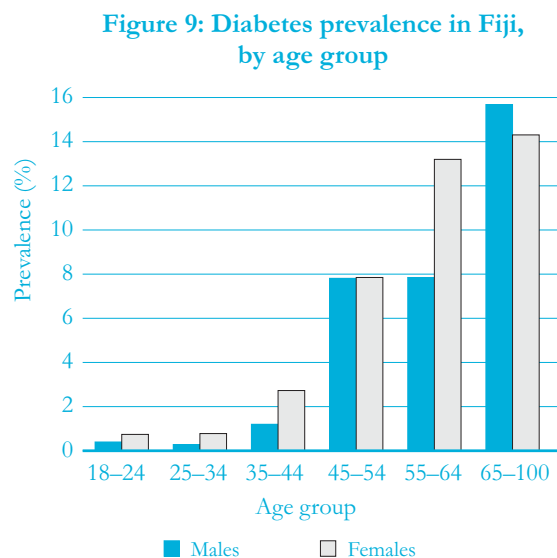
particularly important risk factor for lung cancer among women. For example, two thirds of women with lung cancer in China are non-smokers, and those exposed to coal smoke at home were found to be at higher risk for lung cancer.²²⁶

Notions of masculinity and femininity also contribute to the greater likelihood of aggressive and high-risk behaviours among boys and men than among girls and women.²²⁷ For example, alcohol use is generally viewed to be a masculine pursuit, and alcohol abuse is more common among men than women in the Region.²²⁸ In a study from Luzon, Philippines, 85.7% of men and 14.7% of women said they had ever had a drink.²²⁹

Some evidence suggests that the intermediate risk factors for NCDs also differ by gender. As discussed above, levels of obesity are rising in developing countries in the Region. Obesity levels tend to be higher among women than among men, especially among poor women and men.²³⁰

Gender-related patterns in NCD morbidity

Although women tend to live longer than men, they also become sick and disabled more often. For example, a recent meta-analysis of population-based surveys on the prevalence of



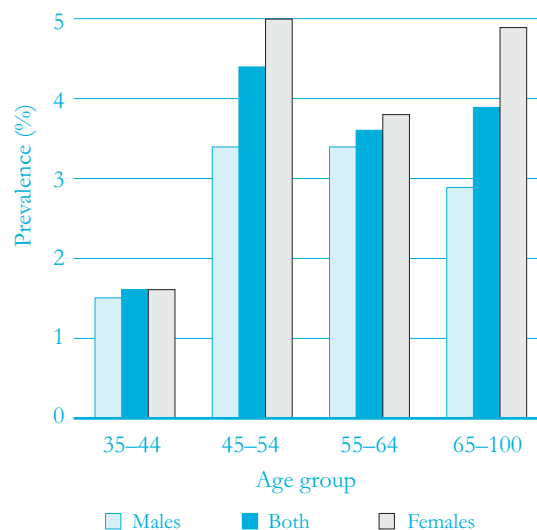
Source: World Health Organization Global InfoBase 2006a.

blindness in Asia, Africa and industrialized countries found that women accounted for two thirds of reported blindness. In Asia and Africa, where cataract is the major cause of blindness, women constituted 53%–72% of people living with cataract. These differences have been attributed to the larger proportion of women in elderly populations in many countries; the poorer access of women to cataract surgery; and women's higher rates of trachoma, an important source of blindness in many developing countries.²³¹

Overall, the prevalence of diabetes appears to be higher among women than that among men. In Luzon, Philippines, women were found to have a higher prevalence of diabetes and impaired glucose tolerance than did men in 2000.²³² Yet this general pattern appears to vary by age group. Figure 9 presents the prevalence of diabetes among men and women of different age groups in Fiji, while Figure 10 presents those for Mongolia.

Injuries are a hidden plague among young men. Remarkably, 70% of the 4.5 million victims of injuries are men.²³³ Of these, 80% occur in developing countries.²³⁴ Injuries include deaths caused by road traffic accidents, violence and self-inflicted injuries. The rate of injury and fatality for

Figure 10: Diabetes prevalence, fasting glucose blood sample and oral glucose tolerance test performed, by age group, Mongolia



Source: World Health Organization Global InfoBase 2006a.

road traffic accidents is 2.7 times higher for men than women.²³⁵ Injuries are of particular concern to the poor, because poverty often forces individuals into precarious and potentially life-threatening employment.

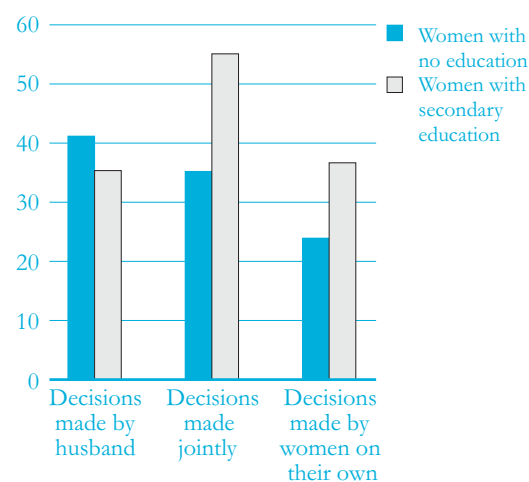
Increasingly, violence is understood to be an important cause of injury among women. It has been linked to physical health problems (injury, chronic pain syndromes and gastrointestinal disorders) and numerous mental health problems, including anxiety and depression.²³⁶ This is reflected by the fact that gender-based violence and rape account for 5% of DALY loss among women in developing countries.²³⁷ A nationwide prevalence survey in Samoa observed that, among women 15–49 years old who had ever been partnered (married or lived with a man), 41% had experienced physical violence and 20% had experienced sexual violence in their lifetimes. The experience of physical and sexual violence was found to be negatively associated with level of education—i.e., 54% of women with primary education had experienced physical or sexual violence during their lifetime. The corresponding rates among women with secondary and higher education were 45% and 35%, respectively.²³⁸

Gender-related inequalities in access to prevention and control for noncommunicable diseases

Gender norms shape the health-seeking behaviour of men and women, as well as their access to prevention and treatment for NCDs. For example, evidence suggests that men are less likely to seek care for mental health disorders than are women, while women tend to report higher numbers of physical and psychological symptoms than men.²³⁹ Similarly, a study of breast cancer among Malaysian women observed that 1.3% of the study population practiced breast self-examinations regularly. This proportion increased to 2.9% among women with a history or family history of other cancers. The study reported that ignorance, fear and anxiety were barriers to breast self-examination.²⁴⁰

As noted above, however, little evidence is available from the Region on access to prevention and treatment for NCDs. In general, this evidence

Figure 11: Who decides how married women spend their own income in Viet Nam (% of women respondents)



Source: Committee for Population Family and Child/Population and Family Health Programme 2003 in Mohideen 2005 (unpublished report).

is not disaggregated by sex or analysed to elucidate how gender might influence access to prevention and treatment for NCDs. Since gender norms are socially constructed and tend to vary across geographical locations, the way gender might shape access to prevention and treatment for NCDs is likely to be context-specific, and overlap with poverty and ethnicity, among other indicators of social exclusion.

Geographical barriers

Some evidence suggests that NCDs of particular concern to women, such as cervical and breast cancer, receive less attention than other NCDs. Preventive efforts to reduce the risk factors for cervical cancer generally are lacking, and effective means of screening and treatment for cervical cancer have not become routinely available in primary health care.²⁴¹ Women also appear to have less access to eye care services than men.²⁴² Such poor coverage of prevention, diagnosis and treatment of NCDs of concern to women suggests that women might experience limited geographical access to these services.

In some areas, women might have less mobility than men. For instance, women might not have their own source of transportation and might be

unable to use public transportation because they generally have less access to cash income. Such constraints might be reinforced through the normative expectation that women remain in the private sphere of the home, while men can move freely in the public sphere. In some areas, women must seek the permission of their husbands or fathers to seek health care. When faced with such constrained mobility, women might seek diagnosis and treatment from nearby traditional healers or village pharmacies, rather than travelling farther to access primary health care.²⁴³

Economic barriers

In many communities, women bear greater responsibility for the well-being of the family than do men. However, women's access to economic resources, such as income, productive assets or health insurance, tends to be lower than that for men. A case study from Tianjian, China, found that

a higher proportion of women (46.3%) than men (41.9%) were likely to lack health insurance, since women were less likely to be employed in the formal sector, more likely to be laid off, and less likely to be reemployed than their male counterparts. As a result, 64.8% of women explained that financial difficulties prevented them from accessing hospital services when referred by a doctor, in comparison with 55.6% of men.²⁴⁴

Gender-based differences in access to, and control over, household resources might further constrain women's access to prevention and treatment of NCDs. Within households in Viet Nam, a woman's ability to decide how to spend her own income appears to vary with her level of education (Figure 11). Women might have little time to devote to health seeking, because of the multiple demands on their time. The normative expectation that women, especially mothers,

Box 10: Coronary heart disease and gender in the United States

Cardiovascular disease, mostly coronary heart disease, is now the leading cause of death among women in the United States. Since 1984, more women have died from cardiovascular disease than have men. The decreasing death rate from coronary heart disease observed over the past decade seems to have largely benefited men; the mortality rate continues to increase for women. Evidence from the United States suggests that women's lower survival rates might arise in part because women with coronary heart disease tend to be diagnosed and treated differently than men.

Studies show that women often present with symptoms that differ from the classic symptoms of heart disease—substernal chest pain, pain down the arm, sweating and nausea—or those experienced by men. The symptoms that women commonly report are often more subtle, and might include gastrointestinal, which health providers tend to associate with illnesses other than heart disease. Health service providers might not recognize these as symptoms of coronary heart disease, resulting in delay or misdiagnosis, potentially greater damage to the heart muscle, more severe attacks later in life, or death.

Even when women are diagnosed with coronary heart disease, they are less likely than men to receive effective health care. Using data on patients presenting with coronary heart disease at 391 hospitals in the United States between 2000 and 2002, a study reported gender differences in patient characteristics, diagnosis and treatment patterns, and outcomes. Of the study population, 41% were women. Compared with men, women waited longer for an electrocardiogram, were less likely to be cared for by a cardiologist, were less likely to receive invasive diagnostic measures and treatments, and were likely to wait longer to receive such treatments. Similar patterns of under-use were reported for more established treatments, such as aspirin and heparin. This finding is supported by data from the United States government and the American Heart Association, which show that women are less likely than men to receive beta-blockers, ACE inhibitors or even aspirin. In the study population, the risk of in-hospital complications, including death, was reported to be 15%–20% higher for women than for men. This difference arises in part because of greater co-morbidities among women.

Sources: American Heart Association 2003; Batchelor 2006; Blomkalns et al. 2005.

should prioritize the health of other members of their household before their own might reinforce this.

Gender-related inequality in the quality of NCD prevention and control services

Research from various countries shows that health service providers are often unaware of, and inconsiderate towards, women's unique health needs and the constraints they might face when seeking to access health care. Instead, health service providers might blame women for delaying seeking treatment.²⁴⁵ Poor women have been found to be particularly sensitive to such behaviour, and might not access formal health services when health providers are perceived to be disrespectful and insensitive to their needs.²⁴⁶ Such inequalities in the quality of care might help to explain the under-detection of heart disease in women. Evidence shows that women stay in the hospital longer after their first stroke, and are more likely to remain disabled than men.²⁴⁷ Women with liver cancer were reported to have lower rates of survival than men in Tianjin, China.²⁴⁸

Studies from developed and developing countries increasingly show that women with NCDs, such as coronary heart disease, present with symptoms that often differ from the classic symptoms, which have been identified largely through studies of men.²⁴⁹ Gender-differentials in diagnosis and treatment also have been observed (Box 10).

Gender-related patterns in NCD mortality

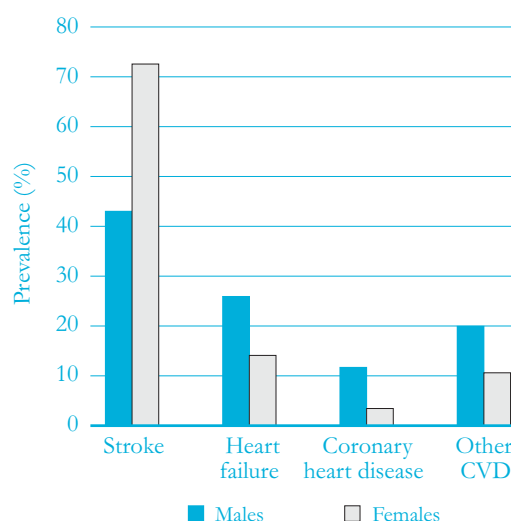
Some NCDs, such as CVDs, have traditionally been viewed as men's diseases. Recent evidence, however, suggests that deaths from coronary heart disease in 2005 were divided fairly evenly between men and women (53% and 47%, respectively).²⁵⁰ The death rate of CVD among men and women over 60 years old is estimated to be similar. Conversely, rates of cancer are estimated to be 30%–50% higher among men than among women. This difference is attributable largely to the higher rates of lung cancer among men than among women. Further, cancers of the lung, stomach and liver are the leading causes of cancer-related mortality among men, while women are more likely to suffer from breast and lung cancer and, in

developing countries, from stomach, liver and cervical cancers.²⁵¹ Overall, men and women are generally afflicted by the same NCDs (the notable exception being the types of cancer men and women experience), although the rates, trends and specific types of disease appear to differ between men and women.²⁵²

A study from the Region begins to clarify the different patterns of NCD mortality among men and women. A community-based health survey in Bavi District, Viet Nam, reported that CVDs were the most common cause of death in the study population. Stroke was the most frequent cause of death, contributing an estimated 56.3% of all CVD deaths. The incidence of stroke, however, was much higher among women than men (Figure 12). The death rates from heart failure, coronary heart disease and other CVDs likewise varied between men and women.²⁵³

Suicide rates are up to three and a half times higher among men than women, except in China and India.²⁵⁴ A study from China estimated that 93% of all suicides from 1990 to 1994 occurred in rural areas. Further, young rural women 15–39 years old accounted for 31% of all suicides. The suicide rate was also found to be threefold higher among the elderly than among the young and middle-aged.²⁵⁵

Figure 12: Proportion of CVD causes among men and women, Bavi District, Viet Nam, 2000



Source: Hoang, Byass and Wall 2003.

Gender-related effect of NCDs on poverty

The burden of caring for sick individuals often falls to female household members. A study from the Republic of Korea reported that, although men and women were evenly represented among cancer patients, 65% of caregivers were women.²⁵⁶ Most caregivers of the elderly in mainland China and Taiwan, China, reportedly are women.²⁵⁷ A study of caregivers in Yiyang City, Hunan Province, and Baoding, Hebei Province, China, in 1997 and 1998 found that more than two thirds (68.2%) were women.²⁵⁸

Female family members, including older women and girls, carry out tasks associated with caregiving, often in addition to their normal daily activities. In addition, female household members might take on the reassignment of household work to compensate for the loss of a productive household member to illness. Among caregivers in Yiyang City, Hunan Province, and Baoding, Hebei Province, China, those with a lower monthly income bear a greater financial burden of caring for elderly parents and parents-in-law than do those with a higher monthly income. Notably, the majority of those receiving care reported not

having medical coverage—i.e., they relied completely on their children for their medicine, doctor visits or hospitalization. Nearly two thirds (66.4%) of working caregivers reported that they received no reimbursement from the state for medical expenses or doctor visits. The study also reported a negative association between a caregiver's income and the likelihood that caregiving duties infringed on a caregiver's time—to spend on oneself, for personal privacy, on recreational activities, to take a vacation, do one's own work and daily chores, and for other relatives and friends.²⁵⁹ In addition, women caregivers in China reported feelings of fatigue and loss of personal time.²⁶⁰

Because women tend to live longer than men, developing countries have a growing number of widows. Given prevailing gender norms and other social customs in many countries, widows are often vulnerable to dependency, isolation, poverty and neglect.²⁶¹ Among the Chinese population 55 years old and above, living with others and no spouse was found to be more common for women than for men, and this proportion increased with age. Women were also more likely to have a lower socioeconomic status than men.²⁶²

3. Why is it important for health professionals to address poverty and gender in noncommunicable disease prevention and control?



5. Why is it important for health professionals to address poverty and gender in noncommunicable disease prevention and control?

As the preceding analysis has sought to show, NCDs are increasing rapidly in the Region. In many developing countries in the Region, the risk factors for NCDs appear to have become generalized among the population, affecting the affluent and poor alike. Evidence from some case studies suggests further that the risk factors for NCDs, as well as the prevalence of NCD-related morbidity and mortality, are increasing faster among poor than among non-poor populations. The level of investment in NCD prevention, diagnosis and treatment remains low, however. Moreover, the distribution of investments appears to favour better-off individuals and communities at the expense of poor or marginalized individuals, households and communities. As such, addressing poverty and gender in NCD prevention and treatment has three main rationales: efficiency, equity and human rights.

Efficiency

The growing burden of NCDs in developing countries in the Region requires urgent action. Experience from developed countries has shown that preventive measures that tackle the common risk factors for NCDs within populations are the most effective way to control and reduce the rising burden of NCDs. Such an approach requires universal access to prevention for NCDs. Yet poor populations are likely to benefit less from investments in NCD prevention measures, because they generally do not have equal access to health care services in many countries in the Region. Furthermore, poor and marginalized populations face considerable constraints when seeking to reduce their exposure to the common risk factors for NCDs. Prevailing gender norms likewise impede efforts to control the risk factors for NCDs in many communities in the Region. Tailoring preventive efforts to meet the needs of poor and marginalized communities can ensure that such measures reach these populations. Incorporating a gender-sensitive response can also ensure that men and women benefit appropriately from such measures. Together, these approaches can improve the efficiency of NCD prevention. Investing in effective prevention for NCDs will begin to efficiently control the rising epidemic of

NCDs in developing countries in the Region. Reducing NCD morbidity and mortality rates in developing countries is an effective means of limiting the impact of the epidemic on health care systems, communities and nations.

Efficiency gains from targeting poor households more effectively with NCD prevention are even more significant, considering that improving the health of the poor is central to poverty reduction. The long-term nature of care and treatment of NCDs can impoverish households and keep them in prolonged poverty. Reducing the burden of NCDs on poor households can strengthen significantly efforts to improve the health of the poor, and thus their overall well-being. Further, health strategies designed to ensure that poor households benefit equitably from prevention and treatment for NCDs, as well as help them meet the cost of seeking care for NCDs, might protect poor households from many of the impoverishing effects of ill health. At the national level, such interventions can contribute to faster economic growth and poverty reduction.

Equity

NCDs are largely preventable. Estimates indicate that more than 50% of deaths from NCDs are attributable to relatively few risk factors: tobacco use, raised blood pressure, poor diet and lack of physical activity. More specifically, at least 80% of heart disease, stroke and type 2 diabetes, and 40% of cancer, could be avoided through healthy diet, regular physical activity, and avoidance of tobacco use. However, the burden of NCDs in the Region is rising and might be increasing more quickly among poor than among non-poor households and communities. The rate, type and pattern of NCDs among populations in the Region also appear to show important gender-related differences. These trends suggest emerging inequalities in the burden of NCDs.

Inequities refer to inequalities that are seen as unfair, unjust and avoidable (Box 11).²⁶³ Although experience shows that some variation in health status is unavoidable—due to biological differences between men and women, for

example—inequalities in the health of the poor and non-poor and men and women increasingly are understood to mirror, at least partially, social disadvantage, such as those based on income, ethnicity and geographical location. Such social divisions appear to play a role in shaping the burden of NCDs in the Region.

Box 11: Defining equity in health

Equity in health may be defined as the "absence of systematic disparities in health (or major social determinants) between groups with different levels of underlying social advantage or disadvantage, such as different positions in the social hierarchy."

Source: Braveman and Gruskin 2003.

The preceding sections demonstrate that, while the effect of poverty on the burden of NCDs in the Region is slowly emerging, more evidence is available on the ways gender might be influencing the distribution of NCDs. These inequalities in the burden of NCDs, therefore, are unfair and unjust, because these gender differentials reflect underlying social advantage or disadvantage enjoyed by men and women.

Gender norms constrain the ability of individuals to influence their health outcomes. Thus, efforts are required—within the health sector and beyond it—to address the gendered distribution of the risk factors for NCDs and NCD-related morbidity, including men's and women's differential access to prevention and treatment for NCDs.

Likewise, the emerging burden of NCDs among poor households and communities also must be addressed. This includes their limited access to prevention and treatment for NCDs, and the impoverishing impact of NCDs on these households.

Human rights

The right to the highest attainable standard of physical and mental health, or the right to health, is rooted in the Universal Declaration of Human

Rights. Numerous other human rights treaties have endorsed this basic right. Every country in the world is party to at least one human rights treaty that addresses health-related rights.²⁶⁴ Concerning NCDs specifically, access to prevention, early diagnosis and effective treatment is encompassed within the right to health.

Non-discrimination is a key concept within the right to health. This concept forbids "any discrimination in access to health care and the underlying determinants, as well as to means and entitlements for their procurement, on the grounds of race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth, physical or mental disability, health status (including HIV/AIDS), sexual orientation, civil, political, social or other status, which has the intention or effect of nullifying or impairing the equal enjoyment or exercise of the right to health."²⁶⁵ Yet NCDs and the risk factors for them appear to be increasing rapidly in poor communities in developing countries. These marginalized populations might have less access to services and resources than the non-poor population.

Box 12: NCD prevention and control and the right to health

When evaluating the right to health within noncommunicable disease (NCD) prevention and control programmes, four criteria may be used:

- **Availability:** well-functioning prevention and control services for NCDs are adequately available
- **Accessibility:** prevention and control services for NCDs are accessible to all, encompassing the four dimensions of non-discrimination, physical accessibility, economic accessibility (affordability) and information accessibility
- **Acceptability:** prevention and control services for NCDs are respectful, culturally appropriate, and gender-sensitive, and honour the confidentiality of all patients
- **Quality:** prevention and control services for NCDs are scientifically and medically appropriate and good quality

Source: World Health Organization 2002a.

The concept of non-discrimination in conjunction with other human rights, such as the rights to information and privacy, should guide the interaction of individuals with the health system. This is reinforced by the inclusiveness of the right to health, which encompasses the right to health services and the right to the underlying determinants of health, such as education and food. However, marginalized populations are often denied multiple human rights. For example, women and ethnic minorities might lack access to

information on how to reduce their exposure to the risk factors for NCDs.

States are responsible for the progressive realization of human rights, including the right to health. Therefore, governments must put in place policies and plans that will make health care available and accessible, and will lead to the realization of other human rights as efficiently as possible. This includes regulating the actions of non-state actors to ensure the right to health is realized.

4. How can health professionals address poverty and gender in noncommunicable disease prevention and control?



4. How can health professionals address poverty and gender in noncommunicable disease prevention and control?

Policy level

The preceding sections show that the burden of NCDs in developing countries in the Region is large and growing, and this burden is slowly beginning to shift to poor and marginalized populations. In response, countries need to prioritize NCD prevention and control.

The knowledge of how to prevent and control NCDs exists (Box 13 discusses tobacco control). Yet the growing burden of NCDs in developing

countries points to the limited coverage of these interventions in the Region. In many cases, health investments disproportionately benefit the non-poor. As a result, poor households and communities might have less access to effective services for NCD prevention and control than might other households. This is of particular concern because the risk factors for NCDs increasingly are concentrated in low-income communities. Furthermore, evidence suggests that men and women experience the risk factors for, and the consequences of, NCDs differently.

Box 13: The WHO Framework Convention on Tobacco Control

The technical knowledge exists to prevent and control many noncommunicable diseases, and policies have been developed to do so. The World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) is a prime example of harnessing scientific knowledge for the elaboration of policies that are affordable and effective in almost all countries. The FCTC is an evidence-based treaty that responds to the globalization of the tobacco epidemic. It is the first treaty negotiated under WHO's leadership. States can become parties to the FCTC through ratification, acceptance, approval or accession.

The FCTC provides a template for a comprehensive approach to tobacco control, including legislative, administrative, educational and scientific strategies to reduce tobacco consumption. While emphasizing demand-reduction strategies, the FCTC also aims to reduce the supply of tobacco products. To this end, the parties to the FCTC agree to:

- price and tax measures to reduce demand
- protection from exposure to tobacco smoke
- regulation of the contents of tobacco products
- regulation of tobacco packaging and labelling
- education, communication, training and public awareness
- comprehensive ban of tobacco advertising, promotion and sponsorship
- demand-reduction measures for tobacco dependence and cessation
- measures to reduce illicit trade in tobacco products
- ban on sales to and by minors
- provision of support for economically viable alternatives to tobacco production
- protection of the environment and the health of persons working in tobacco production
- research, surveillance and information exchange
- liability

The FCTC reaffirms the rights of everyone to enjoy the highest standard of health. In the preamble, the FCTC emphasizes the global commitment to ensure the full participation of women at all levels of policy-making, and to eliminate discrimination against women in health care. It further acknowledges the gendered nature of the tobacco epidemic, and calls for gender-specific tobacco control strategies.

The FCTC also articulates the need for measures to promote the participation of indigenous individuals and groups in the development, implementation and evaluation of tobacco control strategies. This is to ensure that such strategies are culturally and socially appropriate, and respond to the needs of indigenous peoples.

Sources: World Health Organization 2003b; Esson and Leeder 2005.

This calls for a gender-sensitive approach to the prevention and control of NCDs.

Intervening early in the NCD epidemic with prevention measures are crucial to reducing the impact of NCDs.²⁶⁶ Estimates further suggest that adopting a healthy diet, regular physical activity and avoiding tobacco use could reduce heart disease, stroke and type 2 diabetes by at least 80%, and cancer by 40%.²⁶⁷ The health gains from prevention have been shown to accumulate over a short period, especially in the area of tobacco control.²⁶⁸ Experience has demonstrated that it is important to establish policies to reduce the risk factors for NCDs before the epidemic is firmly entrenched in developing countries in the Region. In countries with such epidemics, policies are required to manage illness and prevent complications.²⁶⁹

Integrating poverty and gender into planning for NCD prevention and control

While the knowledge of how to reduce the growing epidemic of NCDs in developing

Box 14: The STEPwise framework factors for success

The World Health Organization has identified a number of factors associated with the successful formulation and adoption of noncommunicable disease prevention and control policies within the STEPwise framework:

- A high-level political mandate to develop a national policy framework
- A committed group of advocates who are often involved with estimating need, advocating action and developing the national policy and plan
- International collaboration for providing political and technical support
- Wide consultation in drafting, consulting, reviewing and re-drafting the policy until endorsement is achieved
- Development and implementation of a consistent and compelling communication strategy for all stages of the process
- Clarity of vision on a small set of outcome-oriented objectives

Sources: Epping-Jordon et al. 2005; World Health Organization 2003b.

countries exists, many ministries of health (MOH) must contend with resource constraints, including limited financial and human resources. Within this context, MOHs often are faced with pressing and competing priorities as they seek to tackle a double burden of disease. In response, WHO has proposed a planning framework that is specifically designed to help MOHs prioritize the allocation of their scarce resources: the STEPwise framework for preventing chronic diseases (Box 14).²⁷⁰ The STEPwise framework is a rational process that rallies support around a course of action that is deemed acceptable to multiple stakeholders.²⁷¹ It has three main planning steps and three main steps for implementation. These are discussed in sequence below.

Evidence for integrating poverty and gender into policy-making

The first planning step in the STEPwise framework for preventing chronic diseases is to assess the distribution of risk factors for NCDs. This evidence is the foundation on which MOHs plan effective prevention and control programmes. Further, this information is used to predict future burden of disease that guides decision-making in the allocation of resources for health. The WHO STEPS approach can assist countries effectively in collecting such information (Box 15).

While determining the distribution of risk factors for NCDs in a population over time is essential to assessing the rising burden of NCDs in developing countries, population averages tend to mask the differential impact of NCDs among various groups within a society. The risk factors for NCDs might be distributed differently among specific groups—such as men compared with women, affluent compared with poor communities, and educated compared with illiterate groups. Thus, socioeconomic status, gender, urban-rural location, region or province, level of educational, occupation, or other indicators of disadvantage must be included in surveillance instruments that collect NCD-related information. Such information is covered by STEPS. Step one includes socioeconomic indicators such as age, sex, level of education and ethnicity.

Box 15: WHO STEPwise approach to surveillance (STEPS)

The STEPS approach is a simple, standardized method for collecting, analyzing and disseminating information on the distribution of risk factors for noncommunicable diseases (NCD). The aim of STEPS is to collect small amounts of useful information. Data are collected regularly and continually using a standardized methodology, thereby enabling ministries of health to detect trends over time. Because the questions and protocols are standardized, STEPS-generated data may be used to compare trends within and across countries. The approach has been applied to the risk factors for NCDs and is being applied to NCDs, starting with stroke. Additional modules are being designed and piloted.

The STEPS framework aims to obtain core data on the established risk factors for NCDs. It uses a sequential process, Steps 1 through 3. Yet, it is designed to allow countries the flexibility to expand the instrument to meet specific requirements. Each step is designed to collect information on risk factors, and include core and optional modules.

Step 1 is a set of core self-reported measures—the “minimum set”—that all countries should obtain. The questionnaire employed for this step is simple. The data generated are not designed to provide a complete overview of each risk factor; rather, the aim is to provide information on the distribution of risk factors in the population.

Step 2 complements step one, with the inclusion of simple physical measurements, such as height, weight, waist circumference and blood pressure. These two steps are deemed appropriate for most developing countries.

Step 3 adds biochemical measurements to the data generated through the first two steps. As such, Step 3 requires access to appropriate standardized laboratories.

Source: For more information on the STEPS instruments, visit <http://www.who.int/chp/steps/en/>.

Once collected, surveillance data need to be analysed by socioeconomic status, sex, urban-rural location, and other indicators of social exclusion. Such disaggregated analysis can help identify the growing burden of risk factors for NCDs among

Box 16: Data generated through STEPS in Fiji

Table 8 presents selected results from the Fiji STEPS survey. They reveal the extent of the noncommunicable disease (NCD) risk and disease burden in Fiji, and were generated largely with local resources. Such data are becoming available systematically, as STEPS is adopted in more developing countries in the Region. These data will be an invaluable resource for planning NCD prevention and control.

Table 8: Selected results from Fiji STEPS, all adult Fiji Islanders (15–64 years), 2002

NCD risk factor	Prevalence		
	Male	Female	Total
Daily smokers	26.0	3.9	15.6
Current alcohol consumers ^a	39.9	5.5	23.8
Low fruit and vegetable intake ^b	86.8	86.9	86.8
Physical inactivity ^c	16.0	31.3	26.4
Obesity ^d	9.8	26.4	17.6
Raised blood pressure ^e	19.8	18.3	19.1
Diabetes ^f	10.2	13.8	11.9
High blood lipids ^g	48.6	37.3	43.1

^a People who had consumed alcohol during the previous 12 months.

^b Average number of servings of fruit and vegetables <5

^c Inadequate physical activity at work, travel and leisure.

^d BMI ≥ 30

^e Classified as mean systolic pressure ≥ 140 mmHg; or a mean diastolic pressure ≥ 90 mmHg, or people who were currently receiving antihypertensive medication.

^f Classified as a fasting blood glucose ≥ 7.0 mmol/L, or people who were currently receiving antidiabetes medication or were on a special diet prescribed by a health worker.

^g Classified as fasting total cholesterol ≥ 5.2 mmol/L.

Note: Data collected 2002; survey analysis and publication completed in 2004.

Source: World Health Organization Regional Office for the Western Pacific 2004.

poor communities and other subpopulations, thereby guiding the identification of effective, appropriate and equitable prevention and control programmes for NCDs.

Mobilizing support for NCD prevention and control

Building political consensus for reducing the burden of NCDs is essential to ensuring the

successful formulation and implementation of national policies. The analysis of surveillance data on the distribution of risk factors for NCDs can form the basis for seeking increased political commitment. Surveillance data paint a vivid picture of the burden of the risk factors, as well as the current and projected burden of NCDs. When combined with evidence on the success of cost-effective NCD prevention and control programmes, such information can be a powerful tool to advocate for increased financial and human resources for NCD prevention and control. Box 17 describes efforts at the international level to mobilize support for NCD prevention and control.

Advocacy needs to target decision-makers within and beyond government. Building alliances with, and support among, civil society organizations can augment advocacy by an MOH. Existing and new partnerships with donor agencies can also support national NCD prevention and control policies.

In many developing countries in the Region, MOHs are often faced with limited political support for NCD prevention and control. Within broader efforts to advocate for increased political support for NCDs, articulating an explicit concern for the integration of poverty and gender into national politics for NCD prevention and control can strengthen political commitment. This approach has the added benefit of aligning NCD

prevention and control with existing efforts to position health more centrally within the poverty reduction and development agenda.

Formulating evidence-based pro-poor and gender-sensitive policies

The second step in the STEPwise framework is the formulation and adoption of a national policy for NCDs that is informed by the analysis of the surveillance data. The national policy is a unifying framework to guide actions at all levels and by all stakeholders. Such a policy normally covers a 5–10 years, and lays out the vision and actions for the prevention and control of the major NCDs.²⁷²

National NCD policies typically aim to maximize health gains across the population as a whole, and the related targets and indicators are often expressed as national or population averages. For example, the international goal for NCD reduction is articulated as a global average (Box 17). However, these goals and policies might be achieved without reducing inequalities between various subpopulations in the prevalence of risk factors for NCDs and NCD-related morbidity and mortality.

Moreover, when efforts are directed towards meeting universal goals and targets, ensuring adequate coverage of prevention and control services among non-poor populations are often favoured, because this approach tends to be easier

Box 17: Proposed international target for NCDs

Noncommunicable diseases (NCD) need to be recognized as a health priority internationally and within developing countries. The World Health Organization has proposed a goal for NCD reduction in an effort to mobilize political and financial support for NCD prevention and control.

The proposed goal is a 2% annual reduction in chronic disease death rates above projected declines during the next 10 years. Achieving this goal will avert an estimated 36 million deaths—26 million of them in low- and middle-income countries.

Source: Strong *et al.* 2005.

Box 18: The national strategy for NCD control in China

In China, the Ministry of Health recently developed a national plan for noncommunicable disease (NCD) prevention and control. Formulated in partnership with the World Health Organization and other relevant sectors, the national plan frames a 5–10 year strategy for cardiovascular diseases, cancer, chronic obstructive pulmonary disease and diabetes. The national plan aims to reduce the overall level of risk factors for NCDs, to improve early detection and treatment, and to provide accessible and affordable services.

Source: Wang *et al.* 2005.

and less costly than those ensuring similar services for poor populations. The differential burden of NCDs among poor and non-poor populations, in particular the growing concentration of the risk factors for NCDs among poor populations, highlights the need for national policies for NCDs that articulate a concern for poor groups.

National policies for NCDs must make sure to capture these differences. The goals and targets for national policies for NCDs should build on the analysis of the distribution of risk factors by socioeconomic status, sex and other indicators of disadvantage; and explicitly articulate the differential risks and impacts of NCDs among various subpopulations—rich and poor, urban and rural, men and women, etc.

A national policy for NCDs can help prioritize and allocate limited resources effectively and equitably. National policy goals and targets may be expressed in terms of reducing inequalities, such as

inequalities in the prevalence of tobacco use among men with higher or lower levels of education, or rates of obesity among poor and non-poor women. These can also incorporate a concern for inequalities in access to effective prevention and control of NCDs among urban and rural populations, for example, as well as limiting the impoverishing effects of NCD-related illness and treatment-seeking among the poor. These clearly defined objectives might be used to guide policy and project design, implementation and monitoring.

The development of NCD-related policies and plans at lower administrative levels should complement the national policy. These sub-national policies need to be aligned within, and contribute towards, the goals articulated in the national policy. As with the national level policy for NCDs, an explicit focus on equity and gender-responsiveness is required in sub-national policies.

Box 19: National legislation to meet public health objectives: the case of FCTC

National laws and regulations are often effective in promoting public health objectives. The international effort to control tobacco use is a recent example of public health initiatives that prioritized enabling legislation. Under the Framework Convention on Tobacco Control (FCTC), signatory states must enact tobacco control measures, which may include taxes, regulate tobacco products content, regulate the access of minors to tobacco products, and regulate environmental pollution. Promulgating such measures translates the international norms articulated in the FCTC into national legislation.

Advocates of such measures may draw upon international human rights treaties to advance tobacco control nationally. Most countries have signed at least one convention that includes the right to health. The FCTC recognizes the importance of human rights to tobacco control efforts, citing in the preamble three such treaties: International Covenant on Economic, Social and Cultural Rights; the Convention on the Elimination of All Forms of Discrimination against Women; and the Convention on the Rights of the Child. These international human rights treaties have established reporting processes and guidelines to ensure that signatory states realize their obligations as defined in the treaties.

However, the effectiveness of international human rights treaties and national tobacco control legislation will depend on the willingness of national legislatures and courts to implement and enforce their decisions. Intimately tied to the willingness of states to enforce tobacco control legislation is the ability of citizens to claim their rights that are articulated in such legislation. Poor and marginalized people may face unique obstacles when trying to exercise their rights. For example, poor individuals might be unaware of their rights, or the legal avenues available to claim their rights. They also might lack the financial resource necessary to support legal actions. Moreover, poor people often perceive the state to be distant and unresponsive to their needs. Civil society organizations are important allies in efforts to mobilize poor individuals to claim their rights from the state, thereby ensuring that national tobacco control legislation is implemented and enforced.

Sources: World Health Organization 2005a and 2003b; Public Health Advocacy Institute 2006 (unpublished).

Integrating poverty and gender into the guiding principles for NCD policies

Experience from various countries has demonstrated the effectiveness of the four guiding principles for NCD policies: comprehensive and integrated public health action, intersectoral action, a life course perspective, and STEPwise implementation based on local considerations and needs.²⁷³ These principles are reviewed below.

Comprehensive and integrated public health action

The nature of NCDs demands an innovative response from the health system in many developing countries. Responding to NCDs as acute, discrete health problems—the approach traditionally used for communicable diseases—is no longer advantageous. Instead, NCDs require a more comprehensive approach that encompasses promotion, prevention and control, and cuts across specific diseases to address the common risk factors for NCDs. Effective management strategies have been found to be remarkably similar across specific NCDs.²⁷⁴ Such an approach has the added benefit of minimizing overlap and fragmentation within the health care system.²⁷⁵

While this approach advocates for the management of the entire population, rather than specific subgroups, the unique constraints poor individuals and communities face when seeking to promote healthy lifestyles and to access prevention and control services for NCDs must be recognized. For example, poor individuals and communities are often absent from health centres, schools and many workplaces. In response, efforts to integrate NCD promotion, prevention and control across settings need to include settings familiar to, and frequented by, the poor and other marginalized groups. In addition, gender norms within societies can place unique constraints on women. Involving urban poor communities, rural communities, informal sector organizations and women's groups, among others, can help to tailor efforts to meet the needs of such subpopulations. To this end, MOHs should nurture explicit links with nongovernmental organizations (NGO), community-based

Box 20: Building partnerships at the national and local levels in the Philippines

In response to the growing burden of noncommunicable diseases (NCD) in the Philippines, the Department of Health has assumed a coordination and advocacy role. The Department of Health has coordinated the formation of the Philippine Coalition for the Prevention of Noncommunicable Diseases, which includes representatives from local government units, the Philippine Health Insurance Company and civil society organizations. A memorandum of understanding for action between parties was signed in 2004. Similar partnerships among government and civil society have been cemented at the local level as part of two demonstration projects in Guimaras and Pateros. In each demonstration site, a coalition of nongovernmental organizations and other stakeholders has generated local ownership and direct involvement of citizens and professionals in the formulation of local responses to NCDs.

Sources: Epping-Jordon *et al.* 2005; World Health Organization Regional Office for the Western Pacific 2004.

organizations and government departments serving poor populations (Box 19).

Intersectoral action

Increased resources within the framework of a national policy for NCD prevention and control can improve health professionals' ability to tackle the growing burden of risk factors for NCDs and NCD-related morbidity and mortality among poor populations. However, many determinants and risk factors for NCDs lie beyond the health sector. To address the determinants of and the risk factors for NCDs, a broad intersectoral strategy is required (Box 20). MOHs should encourage and coordinate such initiatives, as well as aim to take into account inequalities in income, educational attainment and nutritional status, among others. MOHs can also provide leadership in setting intersectoral agendas and priorities to create an environment that enables the reduction of the NCD burden among poor and marginalized communities.

A commitment to gender equality, and recognition of the gendered nature of many of the

determinants and risk factors for NCDs, also must guide such intersectoral coordination. To this end, coordination should incorporate and nurture partnerships with, among others, the women's and gender machinery of government and civil society organizations with an explicit commitment to gender equality. Such broad coalitions can mobilize support across diverse stakeholders and segments of society towards shifting the gender-based inequalities that might facilitate the spread of the risk factors for NCDs among men and women.

At the global level, WHO launched the Commission for Social Determinants of Health, which aims to draw attention to the impact such social determinants have on producing and sustaining inequalities in health. The Commission's mandate includes recommending strategies to improve the health of the poor by addressing the social determinants of health.²⁷⁶ Nationally, Poverty Reduction Strategy Papers (PRSP) or other national socioeconomic development plans potentially provide an example of a multisectoral approach to tackling social determinants of health. However, PRSPs have tended to overlook the impact of NCDs in developing countries.²⁷⁷ PRSPs or other multisectoral planning instruments offer the opportunity to increase policy coherence and undertake joint planning to address the determinants of and risk factors for NCDs within and beyond the health sector.²⁷⁸ MOHs, therefore, need to advocate for the inclusion of NCDs within such multisectoral planning instruments.

A life course approach

As discussed above, the risk factors for NCDs tend to accumulate from fetal life onwards. In addition, many risk behaviours are learned in childhood and adolescence. As such, national policies for NCD prevention and control must include strategies that target individuals throughout the life course, especially in childhood and adolescence. Yet population-wide approaches might miss poor or otherwise marginalized populations. For example, many risk factors for NCDs that occur in utero have been found to be associated undernutrition among mothers.

Tackling such risk factors requires a response that acknowledges the unique constraints poor women face in achieving adequate nutrition in pregnancy. Among other approaches, challenging gender norms that devalue women's health and explicitly addressing poverty might be required. Similarly, school-based strategies might miss out-of-school and working children, who tend to be disproportionately poor. Thus, to be effective, a life course approach needs to be tailored to meet the particular needs of poor girls and boys and men and women throughout their life course.

STEPwise implementation

Given the resource constraints faced by many MOHs in the Region, implementation of the comprehensive approach adopted in national NCD prevention and control policies is often unfeasible. Interventions that are more feasible to implement within existing resource constraints might need to be pursued first and then expanded upon. In this process poverty- and gender-related concerns should be explicitly addressed. For

Box 21: STEPwise approach to planning in Tonga

Tonga faces a fully established chronic diseases epidemic. Until recently, however, Tonga did not have a national plan for noncommunicable disease (NCD) prevention and control. While the government was committed to the formulation of such a national plan, resource scarcity was a major impediment. With the small number of health professionals in the field of NCD prevention and control, reaching a consensus on possible priority actions became even more important to ensure the most effective use of scarce human resources for health. To this end, the government sponsored a series of consultations during 2003. The STEPwise approach guiding the planning process is credited with achieving more than just the formulation of a consensus document. By the end of 2003, the government had produced an action plan that was adopted rapidly. Since then, this has become an instrument for coordinating the contributions of partner organizations to NCD prevention and control.

Source: Epping-Jordon *et al.* 2005.

example, interventions to promote, prevent and control NCDs, and to reduce barriers to access faced by poor populations, might be prioritized over those for the population in general or those that target non-poor populations. This is because poor individuals and communities face the most severe constraints in reducing their exposure to the risk factors for NCDs, as well as in accessing prevention and control for NCDs. Similarly, the criteria used to determine which interventions are feasible should consider the different risk factors for NCDs experienced by men and women, and how the burden of disease falls differently upon men and women.

Identify steps to implement evidence-based policy

Identifying the most effective means of implementing the national NCD policy constitutes the third step of the STEPwise framework. As

Box 22: Core competencies for health staff caring for patients with NCDs

Patient-centred care:

- Interviewing and communicating effectively
- Assessing change in health-related behaviour
- Supporting self-management
- Using a proactive approach

Partnerships:

- Partnering with patients
- Partnering with other providers
- Partnering with communities

Quality improvement:

- Measuring care delivery and outcomes
- Learning and adapting to change
- Translating evidence into practice

Information and communication technology:

- Designing and using patient registries
- Using computer technology
- Communicating with partners

Public health perspective:

- Providing population-based care
- Systems thinking
- Working across the care continuum
- Working in primary care-led systems

Source: World Health Organization 2005e.

discussed above, criteria for choosing interventions should include their feasibility, local needs, capacity for implementation, and potential constraints and barriers, as well as a commitment to addressing poverty and integrating gender equality. Based on these criteria, interventions can be identified as “core”, “expanded” and “desirable”. The core interventions are the starting point and foundation for further action.²⁷⁹

Service level

To respond adequately to the growing burden of NCDs, health systems in developing countries need to be reoriented away from their traditional focus on acute care to an approach to care that is embedded in a long-term perspective emphasizing prevention.²⁸⁰ This reorientation demands integrated, evidence-based guidelines for the treatment and management of NCDs. Approved at the national level, these guidelines are then tailored to fit the local context to facilitate the delivery of care in low-income settings.²⁸¹ An assessment of the effect these guidelines have on the treatment and management of NCDs suffered by men and women might call for revised guidelines that meet the needs of men and women better.

The approach to treatment and care for NCDs emphasizes prevention and management of overall risk. In general, an assessment of risk based on multiple risk factors has been more accurate than that based on single risk factors. Similarly, a combination of interventions might be required to reduce elevated risk.²⁸² Clinical interventions are an important component of a comprehensive approach to reducing the risk of disease onset. Highly effective clinical interventions can also reduce death and disease, and improve the quality of life of people living with NCDs. Such clinical interventions include supporting behavioural change, using pharmacological agents and surgery.²⁸³

In many developing countries in the Region, training of the health workforce has not kept pace with the rising burden of NCDs. Health service providers caring for patients with NCDs require knowledge and skills that differ from those needed when caring for patients with episodic illness.²⁸⁴ For example,

patients with NCDs might require care over many years. Notably, evidence shows that the effective management strategies for various NCDs are comparable. Management of heart disease, diabetes, disabilities, among other NCDs, is premised on essentially the same general components: a well-defined care plan, patient self-management, scheduled follow-up appointments, monitoring of outcomes and adherence, and step-by-step treatment protocols. This re-conceptualization of patient care might require a specific set of competencies for the health workforce. These new competencies are described in Box 22.

Functioning clinical information systems are vital to support the coordination of such an approach to NCD treatment and management. Clinical information systems are needed to organize patient information, track and plan patient care, and facilitate patient self-monitoring, as well as to encourage health providers to schedule patient follow-up.²⁸⁵ Information systems can take various forms with different levels of technological sophistication. Low-cost information systems that employ simple technology might be more appropriate for health facilities in low-income settings.

Efforts to improve the general responsiveness of health providers translate these core competencies into enhanced quality of care for poor men and women. Some evidence suggests that health care providers are not sufficiently aware or sensitive to the health care needs and preferences of poor individuals.²⁸⁶ The behaviour of health staff has been found to be of particular concern for poor women, who might not seek care in health services where the health providers are perceived to be disrespectful or insensitive to their needs.²⁸⁷ Enhancing the responsiveness of health providers to poor men and women might include: improving staff attitudes, communication skills, and general quality of services provided; decreasing waiting times; and increasing confidentiality. In particular, efforts should be made to increase the awareness, sensitivity and skills of health care providers in dealing with those from poor and marginalized communities to ensure that all clients, especially poor individuals, are treated with dignity and respect.

Programme level

Improving the effectiveness of efforts to promote healthy lifestyles, as well as the accessibility of NCD prevention and control for poor individuals and communities, is an important means of addressing inequalities in the burden of NCDs. In other words, for poor and marginalized households and communities to benefit disproportionately from increased resources for NCD prevention and control, and from pro-poor goals and policy, interventions that reach poor individuals and communities must be prioritized. Further, since the risk factors for NCDs and NCD-related morbidity and mortality might affect men and women differently, a response that integrates a gender-focus is needed.

The following section discusses innovative strategies health professionals are employing to improve the accessibility of health care for the poor, and to ensure that men and women benefit

Box 23: Self-management in Shanghai, China

Individuals living with noncommunicable diseases (NCD) need to be equipped with the knowledge and skills to manage their condition daily. Self-management has been widely recognized as a component of successful treatment for NCDs. Evidence from developed countries suggests that strengthening self-management can improve patients' health behaviour and health status, while lowering the use of services.

A study in Shanghai, China, assessed the effectiveness of self-management in adults 20 years old and above, who suffered from one of the following conditions: hypertension, heart disease, chronic lung disease, arthritis, stroke or diabetes. The study was undertaken from June 1999 to February 2000 in five communities. The results showed that, when compared with the control group, patients who exercised improved self-management enjoyed significant gains in eight measurements of health status and utilized health care services less. Notably, patients with higher levels of education experienced greater improvements over the 6-month period than those with lower levels of education.

Source: Dongbo *et al.* 2003.

equally from resources allocated to NCD prevention and control. As these interventions are still relatively new, they have not yet been evaluated rigorously or standardized. However, they suggest some ways forward. Each strategy must be refined based on further analysis and country-specific situations. This is not an exhaustive list of strategies, as the evidence base for equity-promoting and gender-sensitive strategies needs to be augmented through more systematic operational research.

Addressing geographical barriers

Effective measures for the prevention and control of NCDs, including behavioural interventions, have resulted in limited coverage and unequal distribution in many developing countries.²⁸⁸ The tendency for developing countries in the Region to lodge health services for NCDs in tertiary level health care facilities in large urban centres often places them beyond the reach of many poor

communities, which are disproportionately located in rural areas. In Pacific island countries, prevention and control services for NCDs might not cover remote and small island communities effectively. Limited coverage creates geographical barriers, which might prevent or delay the poor from seeking timely diagnosis and treatment for NCDs. The access constraints that geographical barriers create might be amplified for women. For example, social norms might restrict women's mobility and demand that, when travelling long distances, they be accompanied.

Although evidence from the Region suggests that poor individuals typically benefit less from public spending on health services than do non-poor individuals, the allocation of public resources for primary health care appears to favour poor individuals.²⁸⁹ For example, preliminary data from a household-based survey in Viet Nam suggests that, in the 12 months before the survey, 11.5% of all households and 18.5% of the poorest 20% of

Box 24: Visual inspection with acetic acid wash for cervical cancer

Cervical cancer is among the most common forms of cancer for women in low-income-settings. An estimated 80% of deaths from cervical cancer occur in developing countries. Among women in low- and middle-income countries, the majority of cervical cancer cases are caused by infection with a subtype of human papilloma virus (HPV). HPV is a sexually transmitted virus that infects cells, and can lead to precancerous lesions and invasive cancer.

Cervical cytology programmes, which screen sexually active women annually or once every 2–5 years, have resulted in a large decline in cervical cancer incidence and mortality in developed countries. To be effective, cervical cytology programmes require established laboratories; highly trained cytotechnologists; and up to three visits for screening, evaluation of cytologic abnormalities and treatment. This approach has been largely ineffective in developing countries, where organized programmes are limited and testing is often of poor quality and performed inadequately. In recognition of these constraints, alternative methods based on visual examination of the cervix have been investigated.

Of these alternative approaches, visual inspection with acetic acid (VIA) has received the most attention. VIA involves naked-eye examination of the 3%–5% acetic acid-swabbed uterine cervix without any magnification; illumination is provided by a bright source of light. Nurses or other paramedical health workers usually perform this test. To be considered positive, the test detects well-defined, dull acetowhite lesions on the cervix. This detection aims for the early diagnosis of high-grade cervical intraepithelial neoplasia and early preclinical, asymptomatic invasive cancer.

Evidence suggests that VIA has similar sensitivity as cervical cytology, though with lower specificity. Because the outcome of VIA is known immediately, it reduces the amount of time women must devote to screening procedures. VIA has also been found to be cost-effective, as it decreases the direct medical cost of screening to the health system and the patient.

Sources: Sankaranarayanan, Budukh and Rajkumar 2001; Goldie *et al.* 2005; World Health Organization 2002d.

households surveyed had accessed commune health centres.²⁹⁰ The extensive primary health care network observed in many countries in the Region is, therefore, generally more accessible for poor individuals and communities than hospital-based health services. Prioritizing the allocation of resources for those aspects of NCD prevention and control that can be delivered through primary health care facilities, thus, might be effective in increasing the coverage and quality of such services among poor communities. This, in turn, might reduce geographical barriers to access. Prevention measures, such as supporting behavioural change, might be delivered effectively through primary health care facilities.

Harnessing the coverage of primary health care facilities for NCD prevention and control might require that technically appropriate diagnosis and treatment methods be prioritized. Primary health care facilities require simple, low-cost methods for the diagnosis and treatment of NCDs (Box 24). These methods might also include the use of pharmacological agents. For example, a combination drug therapy (aspirin, beta blocker, diuretic, statin) for people at a high risk of a cardiovascular event has been shown to be useful in developing countries.²⁹¹

Building on the network of primary health care facilities can improve the geographical access of poor individuals and communities to NCD prevention and control. To augment this strategy, NCD prevention and control investment can consider prioritizing underserved areas or those where the poor are concentrated, such as rural, urban poor and remote island communities.

To reach areas that might be underserved by the primary health care system, financial incentives can be provided to NGOs and private providers working in these areas to extend their portfolio of services to include NCD prevention and control. NGOs addressing gender-based violence or reproductive health, for example, could be encouraged to integrate additional gender-based risk factors for NCDs into their programmes. Financial incentives also might persuade these alternative providers to enter underserved areas. Cambodia, for example, has employed a successful

Box 25: Screening programmes targeting low-income populations

Implementing screening programmes among low-income populations might help extend the coverage of diagnosis and treatment of particular noncommunicable diseases. Screening programmes consist of the systematic application of a test to identify individuals at risk of a disease. Outreach programmes in low-income areas might encourage those who have not sought medical care to benefit from diagnosis and treatment.

To be effective, screening programmes must seek to identify diseases or disorders that are well-defined, of public health importance, and are known to be prevalent in the population. Further, effective, affordable and acceptable treatment regimes should be made available to those who are identified through screening programmes as suffering from the disease or disorder under investigation. The range of effective screening tools is limited. Notable exceptions include screening for elevated risk of cardiovascular disease using an overall risk approach, early detection of breast cancer and cervical cancer.

Source: World Health Organization 2005a.

strategy of contracting NGOs to provide health services in several districts. This arrangement has increased the accessibility of health services, often to the benefit of the poor.²⁹² Integrating NCD prevention and control into such arrangements also might improve the accessibility for poor individuals. The extension of such arrangements to private providers might be considered in areas where poor individuals consult private practitioners, such as in poor urban communities.

Community-based approaches

Attention is increasingly turning to the role communities can play in supporting and extending the delivery of services for NCD prevention and control in poor communities in developing countries.²⁹³ Community-based interventions for NCDs tend to target a specific community with the aim of reducing the risk factors for NCDs.²⁹⁴ Important aspects of community-based intervention are the mobilization and participation of community members in decisions that affect

their health. This approach also aims to promote partnerships across a wide range of actors, including community members, community-based organizations, health providers and policy-makers, with a view to using community and health service resources to enhance coordination and collaboration. While community-based initiatives might be effective in extending the reach of services for NCDs in general, they do not benefit poor community members automatically.

Communities tend to be riven with social hierarchies and, sometimes, conflicts. The differing interests within communities must be recognized to ensure that better-off community members do not capture the benefits of community-based initiatives. Similarly, concerted effort is required to ensure that women's interests are articulated along with those of men in the planning and implementation of community-based interventions. Dividing men and women into separate groups might enable women to participate more freely than they would as part of a

mixed group. Box 26 discusses community-based approaches to improving the living conditions of urban slums.

Community-based interventions for NCD prevention and control increasingly are coordinated across various settings, such as workplaces and schools. School-based interventions have been found to be cost-effective in reducing risk factors for NCDs among children. Targeting schools in poor areas and extending this approach to cover children who are unable to attend school, such as working children, will help to ensure that poor children benefit from such integrated approaches. Such a tailored approach also might be necessary to reach, for example, girls in countries where they are less likely to attend school and tend to leave school earlier than boys.

Community-based approaches to NCD prevention and control are likely to include an element of home-based care, which consists of any form of care given to sick people in their

Box 26: Community-based initiatives to improve the built environment in urban slums

A critical response to the rise of noncommunicable diseases (NCD) in developing countries has centred on improving the built environment in urban areas. This approach is advocated because it increases patterns of physical activity, such as walking, cycling and other forms of active transport. In addition to these positive affects, improving the built environment of slum areas has the potential to drastically enhance the well-being of urban poor communities.

Worldwide, one in six people lives in an urban slum. The seventh Millennium Development Goal (MDG) (target 11) calls for significant improvement in the lives of at least 100 million slum dwellers by 2020. The MDG Task Force defines a slum household as a group of individuals, living under the same roof, who lack one or more of the following necessities: access to improved water, access to improved sanitation facilities, sufficient living area, structural quality and durability of dwellings, and security of tenure. Experience shows the importance of partnering with urban poor associations. Community-driven processes that slum dwellers initiate and manage have proven to be effective in improving the living conditions in slums. The leaders of such associations are almost always women.

The Urban Poor Federation represents roughly half of the informal settlers in Phnom Penh and 10 other urban centres in Cambodia. Through community-based savings and credit schemes, the federation has assisted poor communities in pooling their resources and identifying strategies to address problems of land, security, houses, toilets, basic services and access to credit. Similarly, the Homeless People's Federation in the Philippines works with communities in many cities, particularly settlements in high-risk areas (on dumpsites and river banks, along railway tracks, on land subject to flooding, on land under bridges, in areas at risk of eviction). The federation mobilizes communities to identify needs, and builds the capacity of inhabitants to prepare plans to address the issues.

Source: UN Millennium Project 2005.

home. This might include physical, psychosocial, palliative and spiritual activities. Home-based care aims to provide high-quality care that helps family caregivers and sick family members to achieve the best quality of life.²⁹⁵ Home-based care has been identified as a cost-effective means of managing NCD-related morbidity.²⁹⁶ Since this approach is central to the overall management and treatment of NCD-related morbidity, home-based care is likely to increase.

Families and communities are the focus of home-based care initiatives, because they are the sources of support and care for ill people.²⁹⁷ Many people prefer to receive treatment in their homes than in health care facilities. In Shanghai, China, for example, more than 90% of dementia sufferers are cared for by their family at home. While this is understood to occur because of the traditional respect for the elderly in Chinese society, such support mechanisms can be eroded over time.²⁹⁸

Health professionals can deliver health services through visits to a home. Alternatively, informal caregivers, such as family members, can be provided with the necessary knowledge and skills to deliver the required care. Informal caregivers frequently require additional support and resources to enable them to provide long-term care.²⁹⁹ Moreover, informal caregivers, usually women, often deliver care in addition to their household responsibilities. When care giving is continuous and time-consuming, social services might be necessary to support the financial strain on informal caregivers and their families. Because care giving tends to place a greater burden on women, social services, such as old age pensions, should be accessible to both women and men.

Addressing economic barriers

Countries employ various health-financing mechanisms to translate NCD policies and plans into results. Financing decisions that are guided by the principle of equity will convert NCD policies and plans into greater access for poor and marginalized communities. An explicit concern for gender in NCD policies and plans can be realized only with adequate financing that reflects these commitments.

In many developing countries in the Region, health financing comprises a mix of public funds and private out-of-pocket payments. For example, user fees might be charged for services delivered in primary health care facilities. Direct out-of-pocket payments have been found to restrict the accessibility of health care services for poor individuals.³⁰⁰ Fees can also discourage women from accessing care, because they might have less access to and control over household resources than men. Exemptions or graduated fees might reduce the impact of user fees on poor men and women. Exemptions authorize some patients not to pay fees based on personal characteristics or membership in a marginalized group. A system based on graduated fees charges less for services offered in facilities serving poor communities than those offered in facilities servicing better-off communities. For example, lower fees might be charged for services offered by health clinics in slum areas or in rural facilities.

Growing concern for the impoverishing affects of health care expenditure on poor households has renewed interest in pre-payment schemes that spread the cost of seeking care in accordance with ability to pay.³⁰¹ Pre-payment schemes can take various forms, such as those financed through general taxation, social insurance or community-based health insurance. Integrating benefit packages for preventive interventions, as well as appropriate diagnosis and treatment for NCDs (including long-term care), into social and community-based health insurance will protect poor households from the impoverishing affect of NCD-related morbidity and mortality. Importantly, ensuring that men and women enjoy equal entitlement to social and community-based health insurance schemes, particularly those administered by household, will ensure the widest coverage of these benefits.

Initiatives that aim to reduce the cost of treatment and management of NCDs could enhance the protection offered to poor men and women through pre-payment schemes. This is particularly the case for those aspects of NCD treatment and management that some pre-payment schemes might not cover, such as drugs. For example, international treatment guidelines for established

CVD recommend long-term anti-platelet, blood pressure-lowering and cholesterol-lowering therapies. However, the cost and complexity of this treatment regime places it beyond the reach of many poor individuals in developing countries. In response to this treatment gap, a fixed dose combination pill (commonly known as the “polypill”) has been proposed. As the components of the polypill are no longer covered by international patents, it can be produced for as little as \$1 per patient per month. As such, it is likely to benefit poor individuals suffering from CVD in developing countries.³⁰² The polypill is a promising innovation, though its efficacy and safety still need to be tested and validated.

Addressing informational and sociocultural constraints

Advocacy—or information, education and communication (IEC)—strategies aim to communicate information strategically to change the perceptions of individuals and influence their decision-making. Advocacy can shape public perceptions by communicating information about NCD risk factors and increasing motivation to change behaviour.³⁰³ Enhanced awareness and understanding of the risk factors for NCDs, and where and when to seek preventive and curative services for NCDs, might increase demand for these services.

Advocacy initiatives aimed at society in general might not reach poor households due to their generally lower levels of education. In addition, poor and marginalized households and communities might lack access to the standard modes of communication, such as television and radio. Numerous factors, including distance, cultural barriers and linguistic barriers, likewise might prevent IEC messages from reaching marginalized communities. Thus, concerted efforts are required to ensure the IEC strategies and messages are tailored to reach these groups—e.g., through illustrated messages for those with low literacy levels. When targeting minority groups, culturally appropriate messages delivered in local languages are required. Health staff or community-based health workers might also undertake outreach strategies to increase

knowledge and awareness among hard-to-reach groups and in low-income settings.

Women similarly might be excluded from mainstream health promotion campaigns. Compared to men, women tend to have lower levels of literacy, and gender norms might restrict their access to mainstream media. Instead, women might rely on relatives and social networks for health-related information. Thus, interpersonal modes of communication might be more effective in communicating health-related information to women than, for example, print media. Involving poor individuals and women in the design and implementation of information campaigns will ensure that local knowledge, priorities and needs are understood and subsequently addressed. These strategies also might ensure that women can access the message and medium of health promotion campaigns.

Monitoring and evaluation

Despite the growing recognition of ongoing and often increasing health inequities in developing and developed countries alike, health information systems have been weak in yielding information needed to assess and address these inequities. The challenges are to

- determine the information needs for addressing health inequities
- shape health information systems to meet those needs
- promote sensitization to equity issues
- develop the skills required to use information for effective planning and policy-making³⁰⁴

The Health Metrics Network has begun work on constructing equity indicators and creating mechanisms to link records between data sources.³⁰⁵ For NCD prevention and control, complementary measures to the global Health Metrics Network can be undertaken at the country level.

A major constraint in tackling inequalities in NCDs in developing countries in the Region is the general lack of data that are disaggregated by indicators of social exclusion at the national and

subnational levels. Disaggregated data are required to assess and analyse the extent of inequalities in the risk factors for NCDs and NCD-related morbidity and mortality, as well as to monitor changes in these patterns over time. Likewise, disaggregated data are needed to identify priority areas and interventions that will benefit poor individuals and households, and to assess how interventions might affect men and women differently.

In addition to data on NCD risk factors generated through surveillance, data collected routinely

within the health system need to be disaggregated and analysed by socioeconomic status, gender, urban-rural location, region or province, level of educational, occupation, or other indicators of disadvantage identified through a poverty analysis. Monitoring and evaluation also should consider these variables. This might be supplemented with appropriate research, including qualitative data to assess unmet needs, perceived quality of health care services, and financial and non-financial barriers that poor men and women might face when accessing health care for NCD prevention and control.

5. Facilitator's notes



5. Facilitator's notes

These notes are provided to support facilitators as they work with learners on integrating poverty and gender issues into specific health topics. Facilitators are recommended to refer to Section 5 of the foundational modules of this Sourcebook, dealing respectively with poverty and gender, which contain additional notes on the target audience, role of the facilitator and suggested methodologies for learning sessions and for evaluation.

The learning sessions and exercises that follow are practical and oriented towards active learning. They are designed to promote group discussion and presentation in analysing NCDs in terms of gender, poverty and other factors that determine the risks and determinants of NCDs, as well as their prevention, control and treatment. The time required for all learning sessions is approximately 19.5 hours.

Expected learning outcomes

Upon completion of the module, participants will be able to:

1. Demonstrate an understanding of NCDs, including the disease burden.
2. Demonstrate an understanding of WHAT the links are between poverty, gender and NCDs.
3. Explain WHY it is important for health professionals to address poverty and gender concerns in relation to NCDs.
4. Indicate HOW health professionals and the health system as a whole can address poverty and gender in the prevention, control and treatment of NCDs.
5. Demonstrate familiarity with some tools, resources and references available to support health professionals in dealing with poverty and gender in the prevention, control and treatment of NCDs.

Home assignment: Have participants read Sections 1 and 2 of the module.

Session 1: NCDs, the NCD disease burden, associated risk factors, underlying determinants, and their poverty and gender influences

Expected learning outcomes:

- To understand NCDs, including the disease burden.
- To identify common risk factors and underlying determinants of NCDs.
- To understand how poverty and gender influence the risks factors for and prevalence of NCDs.

Time required: 2.5 hours

Preparation:

- A newspaper or journal article, short story or review of statistical data to begin the session.
- Resource table containing samples of local, national, regional or global NCD statistics, including health indicators, surveys, epidemiological studies, community assessments
- Newsprint and tape
- 3 x 5-inch pieces of coloured paper.

Learning activities:

Resource table: Place a table in the back of the room. Place all the resources you have assembled on the table, and encourage students to look them over for the duration of the workshop.

Group brainstorming and discussion (30 minutes)

Ask the participants to define NCDs and list all types or groups of NCDs

Write their answers on the blackboard or white paper. Through discussion, arrive at a common definition that covers all the diseases or conditions termed “noncommunicable diseases.”

Ask participants to explain the differences between noncommunicable and chronic disease.

Presentation on the burden of NCDs and projected trends in such diseases (2 hours)

Explain that NCDs are the fastest growing health problem worldwide—of the 58 million deaths worldwide in 2005, an estimated 35 million (60%) were caused by NCDs. Refer to section 1 of the module, Figures 1 and 2, as well as recent national and regional data.

Ask the group to identify, using available data, the most common NCDs among males and females in their country

Discuss NCD risk factors, underlying health determinants, and poverty and gender inequalities influencing disease prevention and control: 60 minutes

Ask the group to define “risk factor” and the modifiable, non-modifiable and intermediate risk factors for NCDs. Build the definitions and illustrate the links between intermediate risk factors and NCDs from what the group says (using the module as a guide). Common modifiable risk factors are unhealthy diet, physical inactivity, excessive alcohol consumption and tobacco use, while non-modifiable risk factors are age and heredity. Modifiable and non-modifiable risk factors together lead to intermediate risk factors—high blood pressure, raised blood glucose, abnormal blood lipids, and overweight and obesity. Intermediate risk factors are associated with an increased probability of NCDs later in life.

Discuss, based on the definitions provided, NCDs from a standpoint of “health determinants”—i.e., the socioeconomic, cultural, political and environmental determinants that interact with risk factors and might reinforce poverty- and gender-related inequalities in access to NCD prevention and control.

Divide participants into five groups, assigning each group one of the following categories of risk factors or health determinants:

- Individual and developmental factors (e.g., developmental, biological, psychological/psychosocial)
- Family, peer and social influences
- Institutional (e.g., work and school) influences
- Neighbourhood, and community, environmental influences
- Macrosystem influences (e.g., marketing, culture and values, political systems)

Ask each group to discuss and list on pieces of coloured paper, within their assigned category,

common health determinants for NCDs in their own country.

- Ask each group to explain the associations of poverty and gender with each of the identified health risks and health determinants.
- Ask each group to explain how poverty and gender cause inequalities in the prevention and control of NCDs.

Ask each group to come to the front of the room and present their category of risk factors or health determinants, as well as the associated poverty and gender influences. Place each group’s coloured pieces of paper on newsprint, a blackboard or wall, drawing a concept map or diagram of the NCD risks and determinants, and associated poverty and gender influences impacting NCD prevention and control.

Based on the concept map or diagram, review and summarize the risk factors and health determinants of NCDs and associated poverty and gender influences.

Home assignment: Have participants read Section 3 of the module.

Session 2: Poverty, gender and NCDs: Why?

Expected learning outcomes:

- To understand the importance of addressing poverty and gender aspects of NCDs from a standpoint of human rights, equity and efficiency.

Time required: 2.5 hours

Preparation:

- Copies of global, regional and national resolutions or declarations, strategies, frameworks and guidelines related to human rights and/or NCDs for the resource table
- Resource table

Learning activities:

Resource table: Place copies of global, regional and national human rights resolutions, declarations, strategies, frameworks and guidelines on the resource table.

Small group discussion (60 minutes)

Divide the group into small groups of 4–5 people. The groups are free to use any resources on the resource table.

Ask each group to discuss the following questions:

- Does everyone have a right to NCD risk reduction, prevention and control? If yes, why? If no, why?
- What is the responsibility of the government in preventing NCDs?
- What is the role of the international community?
- Why should governments be concerned with NCDs, risk reduction and prevention?

Each group comes to a consensus and writes the main points on white paper.

Group presentations (60 minutes: 10–15 minutes for each group)

Ask one group to present their conclusions for first question. Ask for other opinions. Discuss in the whole group.

Continue by asking another group to present their answer to second question. Continue for all 4 questions.

Summary (30 minutes)

Ask one or more participants to summarize:

- the reasons it is important to address NCDs; and
- the relevance of poverty and gender issues to NCD risk reduction, prevention and control.

Home assignment: Have participants read Section 4 of the module.

Session 3: What can health professionals do?

Expected learning outcomes:

- To discuss interventions by health professionals that would address the main risk factors and determinants for NCDs and NCD prevention and management, from a poverty and gender perspective.

Time required: 8.5 hours

Preparation:

- Arrange for a local community NCD assessment visit in advance, selecting a vulnerable or poor community interested in the promotion of healthy lifestyles.
- Set up a resource table with copies of the resources (see Section 6, Additional Resources) for participants to review.
- Copies of national health, nutrition and NCD studies or survey results; i.e. demographic and health, STEP surveys, NCD situational analyses etc.
- Sources of information on national or subregional, local initiatives addressing community health promotion, NCD risk reduction.

Learning Activities:

Resource table: Set up the resource table in the back of the room. Place all the resources (see list) you have gathered on the table, plus copies of any national studies, surveys, etc.

Urge participants to look over the resources and studies while they are formulating approaches in their small groups.

Group discussion (45 minutes)

Ask participants to list the important NCD issues and problems (including associated risk factors, health determinants) in their country. Are the problems associated with poverty and/or gender inequities? Discuss the list, using and applying data from national studies or surveys to prioritize the top five problems.

Community NCD screening visit (4–6 hours)

To illustrate the variability of NCD statistical data, in terms of socioeconomic status or vulnerability, ethnicity, gender and/or rural/urban differences, arrange for participants to visit a local poor community to gather firsthand screening data on the local prevalence of one or more NCDs and/or risk factors, such as obesity, smoking, and/or elevated blood pressure, hypertension. The data are disaggregated by sex, age and socioeconomic

status (if known), and prepared for later presentation and discussion by small groups of participants, using accompanying tables and graphs to illustrate local prevalence data.

NCD community screening debriefing and summary discussion

Lead a participatory discussion by asking participants to:

- share their thoughts about the community screening experience;
- present the prevalence data obtained, using accompanying tables and graphs;
- analyze the data, in comparison to national data sets, from a poverty and gender perspective; and
- discuss the relevance of community screening exercises or surveys, in terms of local NCD situational assessments, community mobilization and preventive health care, risk reduction.

Small group discussions: (1 hour)

Divide the participants into five groups (up to 4–5 per group). Give each group one of the five NCD-related problems.

Small group tasks:

- Have each group identify what is currently being done in the country to address the problem.
- How do poverty or gender affect the problem? Use examples to illustrate the affects of poverty and gender on the problem.
- Make recommendations on what can be done—at national level, health service level, community level, health professional level. Use a role play or drama or story to illustrate new or innovative approaches.

Presentations in the large group (1 hour, 15 minutes)

Each group presents their work: (15 minutes per group)

- What is the scope of the NCD problem in the country?
- What is being done?
- Make recommendations for incorporating a

poverty and gender focus into NCD policies, plans and programmes.

- Include a role play, story or short drama illustrating a new or innovative approach.

Discuss each group's work and their ideas after each presentation.

Summary (30 minutes)

Lead a participatory discussion to summarize the main points:

- Main NCD problems in the country.
- How poverty and gender influence each of the problems.
- Why addressing gender and poverty issues in NCD policy formulation and programming is crucial.
- How health professionals can help.

Home assignment: Have participants read resource materials, studies, surveys, newspaper articles and/or view audiovisual materials focused on the various factors—behavioural and community, institutional or environmental—shaping NCD-related risk behaviours of children and youth.

Session 4: What can health professionals do?

Expected learning outcomes:

- To discuss cross-sectoral approaches and interventions to address the nutritional and behavioural factors, as well as community, institutional or environmental influences placing children and youth at risk for NCDs.

Time required: 6 hours

Preparation: Make preparatory contact with volunteer sector representatives or stakeholders (4–5), enabling them to prepare a situational assessment related to NCD risks and/or determinants impacting children and youth. The sectoral representatives or stakeholders to be considered include those in:

- Education
- Finance and planning
- Governance and politics
- Communities

- Agriculture
- Sports
- Religious groups and non-governmental organizations

Learning activities

Stakeholder interviews and report preparation (5 hours)

Divide participants into five groups. Assign each group to prepare interview questions for stakeholders or representatives of one of the sectors involved in addressing NCD risk factors and determinants among children and youth. Each group, using a prepared set of questions, interviews stakeholders or sector representatives about the main factors and determinants influencing NCD risks among children or youth, and discusses potential interventions that promote healthy lifestyles.

Each group prepares a presentation focused on the particular NCD-related problems of children/youth.

- Do these NCD-related problems vary between boys and girls?

- What is being done?
- Are these efforts reaching poor and/or marginalized children and youth?
- What are the recommendations for collaborative interventions focused on healthy lifestyles of children and youth, particularly those who live in low-income households?

Summary (1 hour)

Lead a participatory discussion to summarize the main questions:

- What are the main NCD problems among children and youth?
- How are stakeholders, other sectors addressing the problems, particularly those of poor and/or marginalized children/youth?
- Why is addressing NCD issues from a cross-sectoral and community partnership perspective crucial?
- How can health professionals work with other sectors and communities in supporting healthy behavioural choices and practices among children and youth?

6. Tools, resources and references



6. Tools, resources and references

The World Health Organization (www.who.int) and the World Health Organization Regional Office for the Western Pacific (www.wpro.who.int) provide a variety of data sources, publications and resources on NCDs.

ID21 www.id21.org has a useful section on infectious diseases under the section on health. Searching for "noncommunicable diseases" or "cancer" etc., yields a number of resources.

The **global strategy for NCD prevention and control adopted by the Fifty-third World Health Assembly** in May 2000 (resolution WHA53.17) calls for the development of networks of national programmes for prevention and control of NCDs to disseminate information, exchange experiences, and support regional and national initiatives. (http://www.who.int/gb/ebwha/pdf_files/WHA53/ResWHA53/17.pdf)

Cancer

In May 2005, the World Health Assembly adopted a resolution on cancer prevention and control (WHA58.22), which calls on Member States to intensify action against cancer by developing and reinforcing cancer control programmes. In response, WHO developed a series of six modules that provides practical advice for programme managers and policy-makers, particularly in low- and middle-income countries. The first module, entitled "Cancer Control: Knowledge into Action" is available at: <http://tinyurl.com/he78l>. Other modules will appear on the same page as they are produced.

Methods for Measuring Cancer Disparities: Using Data Relevant to Health People 2010 Cancer-related Objectives (http://seer.cancer.gov/publications/disparities/measuring_disparities.pdf) provides information on some conceptual issues and different methodological approaches to measuring progress towards the goal of eliminating cancer-related health disparities.

Cardiovascular diseases

ProCOR provides information on CVDs in developing countries (www.procor.org)

Diabetes

International Diabetes Federation (www.ifd.org) provides information on diabetes worldwide.

World Diabetes Day: <http://www.who.int/diabetes/actionnow/wdd2005/en/index.html>

Economic impact of NCDs

Chronic conditions: the economic impact includes links to studies described below that address the costs related to chronic conditions. http://www.who.int/chronic_conditions/economics/en/index.html

Gender mainstreaming

Canadian International Development Agency has a number of resources on gender mainstreaming (www.acdi-cida.gc.ca)

Gender, Women and Health, World Health Organization offers various resources on gender and health: <http://www.who.int/gender/mainstreaming/resources/en/index.html>

World Health Organization, Gender, Women and Health tools for gender mainstreaming:

- ‘En-gendering’ the *Millennium Development Goals* (MDGs) on Health:
<http://www.who.int/gender/mainstreaming/MDG.pdf>
- Gender Analysis in Health: A Review of Selected Tools:
<http://www.who.int/gender/documents/en/Gender.analysis.pdf>

UN Internet Gateway on the Advancement and Empowerment of Women (WomenWatch) provides information on gender mainstreaming policies and practices in UN entities (<http://www.un.org/womenwatch/asp/user/list.asp?ParentID=10314>).

Gender-responsive budgeting initiatives, IDRC (http://www.idrc.ca/gender-budgets/ev-64152-201-1-DO_TOPIC.html), includes an overview of tools for a Gender-Sensitive Analysis of Budgets (http://www.idrc.ca/uploads/user-S/11279431651Tools_for_GenderSensitive_Analysis_of_Budgets.pdf) and a comprehensive list of agencies involved in gender-responsive budgeting (http://www.idrc.ca/gender-budgets/ev-66948-201-1-DO_TOPIC.html).

Health care services

The Observatory on Health Care for Chronic Conditions (http://www.who.int/chronic_conditions/en/) provides information and resources to people around the world who aim to improve health care for chronic conditions.

Surveillance

WHO STEPwise approach to surveillance (STEPS) (<http://www.who.int/chp/steps/en/>)
STEPS instrument (<http://www.who.int/entity/chp/steps/Instrument.pdf>)
Stepwise approach to stroke (<http://www.who.int/chp/steps/Stroke/en/index.html>)

Tobacco control

WHO Framework Convention on Tobacco Control (FCTC) (http://www.who.int/entity/tobacco/framework/WHO_FCTC_english.pdf). General information on the FCTC is available at [who.int/gb/fctc/](http://www.who.int/gb/fctc/).

IDRC ([www.idrc.org/en/ev-83280-201-1-D\)_TOPIC.html](http://www.idrc.org/en/ev-83280-201-1-D)_TOPIC.html)) has a research programme on International Tobacco Control, which includes a component focusing on tobacco and gender.

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