World Health Organization

Equity, social determinants and public health programmes

Extraits : résumés des chapitres et quelques graphiques seulement

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1 Introduction and methods of work

Erik Blas and Anand Sivasankara Kurup

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1.1 Introduction

The work presented in this volume was carried forward with the conviction that achieving greater equity in health is a goal in itself, and that achieving the various specific global health and development targets without at the same time ensuring equitable distribution across populations is of limited value. Most literature on equity and the social determinants of health is based on data that are from high-income countries and that focus on possible causal relationships. Even in high-income countries there is limited documentation of experiences with interventions and implementation approaches to halt growing or reduce existing inequities in health.

This shortfall is addressed within the World Health Organization (WHO) system by the Priority Public Health Conditions Knowledge Network, which aims to widen the discussion on what constitutes public health interventions by identifying the social determinants of health inequities and appropriate interventions to address the situation. The work of the Network has been focused on practice, establishing the knowledge base as a starting-point and then quickly and pragmatically moving on to exploration of potential avenues and options for action. While the scientific review of evidence has played a major role in the work of the Network, the main aim has been to expand the known territory and move, in a responsible and systematic way, into the unknown, by suggesting new paths of action for public health programmes. Effectively addressing inequities in health involves not only new sets of interventions, but modifications to the way that public health programmes (and possibly WHO) are organized and operate, as well as redefinition of what constitutes a public health intervention.

While old public health problems persist, such as malaria, tuberculosis and sexually transmitted diseases, new challenges are presenting themselves. Many of the old problems persist because we have failed to effectively apply the tools that we have at hand – and some of those tools have even been destroyed in the process, for example by creating drug resistance. Another set of reasons for the failure is that we have not sufficiently recognized and appropriately dealt with the inequities underlying average health statistics. This has meant that even when overall progress has been made, large parts of populations, and even whole regions of the world, have been left behind.

Most if not all of the new public health challenges that we are facing – be it in the areas of communicable, maternal, perinatal and nutritional conditions, non-communicable conditions or injuries – are directly related to how we organize our societies and live our lives, with inequities among and within populations again standing out. Inequities both fuel the emergence of new public health challenges and result from them. Most ministries of health, health systems and health programmes are still primarily concerned with delivering the downstream interventions responding to the incidental needs and demands of individuals that constitute the traditional intramural health care services. These are important and need to be provided in any decent society. However, they are not effective responses to the old and new public health problems that continue to be produced and reproduced. In the public health community there is a growing recognition that if we are to deal with both the old and the new challenges and to achieve global targets, such as the health-related Millennium Development Goals, especially from a health equity perspective, we will have to go far beyond the traditional health interventions and address the upstream determinants of health.

The Priority Public Health Conditions Knowledge Network was established as one of nine knowledge networks by the Commission on Social Determinants of Health, which was created in 2005 by WHO to marshal evidence and provide recommendations on what can be done to promote health equity and to foster a global movement to achieve it (*1*). From the outset, it was anticipated that the Network could contribute to the work of the Commission in at least two unique ways: from a health conditions perspective, as distinct from the topical perspectives of social determinants pursued by the other knowledge networks; and from a programmatic perspective, as public health programmes in their various shapes are key actors on the ground. A large number of WHO-based public health programmes participated in the work, which resulted in the 12 individual chapters and synthesis chapter that comprise the remainder of this volume. The number of programmes was large enough for the resulting proposals to have a general value.

During the work of the Priority Public Health Conditions Knowledge Network a number of events occurred with direct relevance to or bearing on the future work of public health programmes:

- The Commission on Social Determinants of Health completed its work and presented its final report documenting the magnitude of health inequities, identifying their social causes and proposing directions for action (*1*). The Priority Public Health Conditions Knowledge Network, as one of the networks of the Commission, assisted in generating evidence and proposals for action, and gained inspiration from the work of the Commission and the other knowledge networks.
- The 2008 *World Health Report* placed health equity as the central value for the renewal of primary health care and called for priority public health programmes to align with the associated principles and approaches (*2*).

Alcohol: equity and social determinants

2

Laura A. Schmidt, Pia Mäkelä, Jürgen Rehm and Robin Room[1]

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1 The authors would like to acknowledge Dag Rekve and Maria Renström for their contribution.

2.1 Summary

Alcohol is a psychoactive and potentially dependence-producing substance with severe health and social consequences. It is estimated that 2.5 million people died worldwide of alcohol-related causes in 2004, and alcohol ranks as the third leading risk factor for premature deaths and disabilities in the world. Evidence suggests that groups of low socioeconomic status experience a higher burden of alcohol-attributable disease, often despite lower overall consumption levels. Health outcomes and socioeconomic consequences are determined not only by the amount of alcohol consumed, but also by the pattern of consumption and the quality of alcohol consumed. These three determinants are again shaped by – and shape – the wider social determinants related to socioeconomic context and position, exposure and vulnerability. The level of abstention, reflecting such issues as gender and poverty levels, is an important mediating factor that often serves a protective role.

Alcohol consumption rates are markedly lower in poorer than in wealthier societies. However, within-society differences in alcohol-related health outcomes by socioeconomic status tend to be more pronounced than differences in alcohol consumption. In other words, for a given amount of consumption, poorer populations may experience disproportionately higher levels of alcohol-attributable harm. Such nuances in the relationships between alcohol and inequity demand further empirical exploration, particularly in developing countries.

Inequities stemming from the harmful use of alcohol can be reduced by interventions directly targeting socioeconomic context and differential vulnerability and exposure. While many existing alcohol interventions have proved effective, few have focused on reducing health disparities or the negative consequences of alcohol on the poor, and new approaches are required.

Alcohol use is an integral part of many cultures; consequently effective interventions to reduce alcohol-related harm and inequities often meet with considerable resistance. Concerted and bold actions at all levels of government are needed to tackle alcohol-related inequities worldwide. This will require increased awareness and acceptance of the public health issues and of the effectiveness of strategies among policy-makers and in public discourse.

2.2 Introduction

Alcohol and inequity: a complex relationship

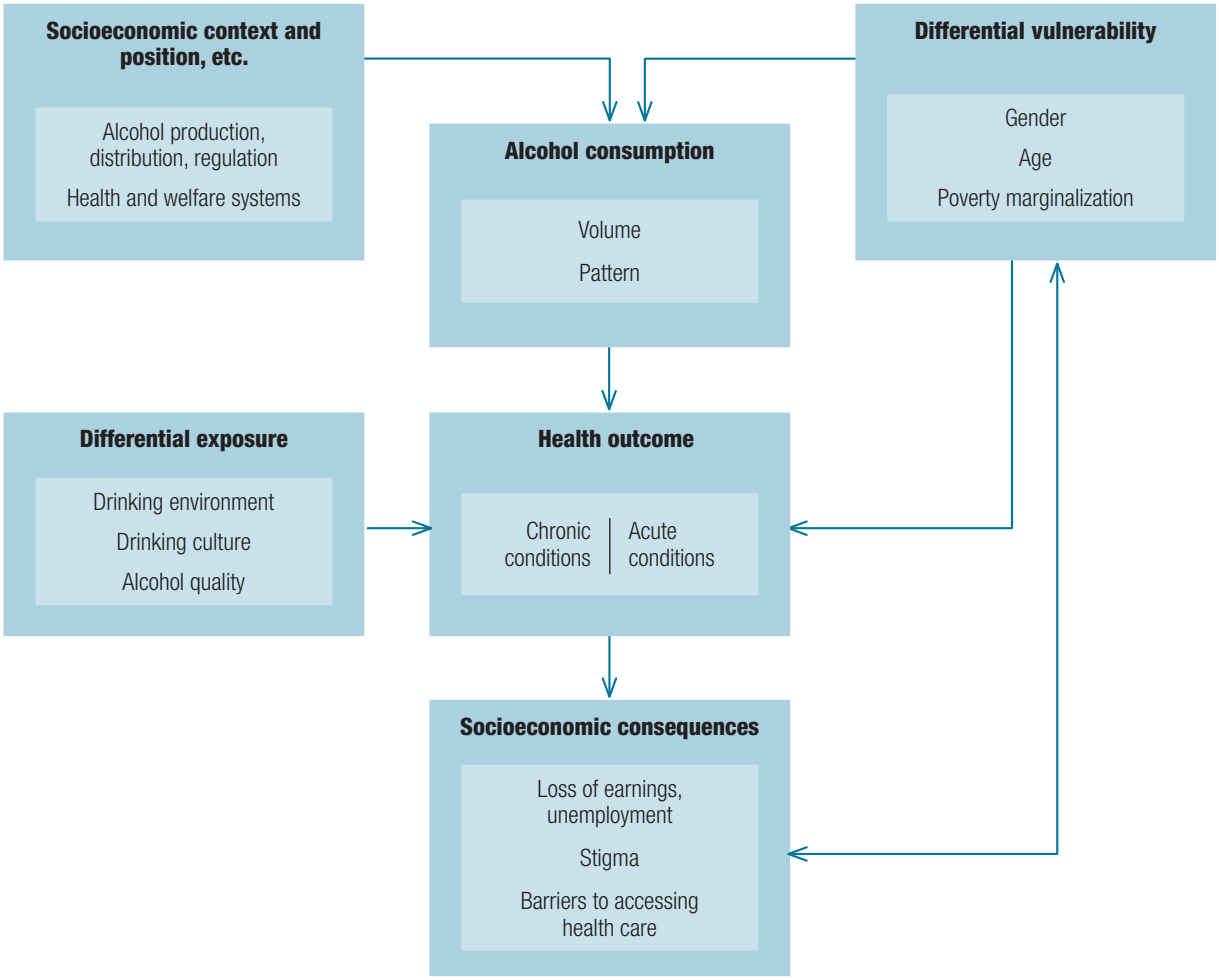
While there is a large body of evidence on the effectiveness of policies targeting the harmful effects of excess alcohol consumption, little is known about interventions that can reduce inequities in alcohol-attributable harm across the social gradient. In the absence of relevant data, policy-makers may either target groups of low socioeconomic status with interventions known to be generally effective, or implement interventions known to reduce the burden of harm in the population as a whole and thereby hope to impact the higher burden of harm borne by groups of low socioeconomic status. There is a need to test both approaches against the evidence.

While much recent work has been undertaken on international experiences with alcohol policy (*1–6*), policy-making on social inequity and alcohol remains hazardous, and the many different sociopolitical, economic and cultural factors giving rise to inequities in alcohol problems mean that predicting the impact of any given intervention is a complex undertaking. Much of the uncertainty stems from one simple, but empirically robust, finding: because alcohol is a commodity that requires disposable income to obtain, the poorest segments of the population are usually the least likely to drink. This opens up the possibility that otherwise beneficial decreases in socioeconomic inequity can lead to an increased burden of alcohol-attributable health problems in low-income populations. The conditions under which this is in fact the case are still not fully understood.

Other basic questions remain unanswered: Do reductions in alcohol-attributable harms at the population level necessarily lead to declines in alcohol-attributable health inequities between groups along the social gradient? How can inequities be reduced without imposing unfair constraints on individual choice among economically disadvantaged groups? How can increases in alcohol-attributable harm be prevented in people of low socioeconomic status in the context of economic development, such as that which has recently been enjoyed throughout portions of Asia and eastern Europe?

There is a great need to generate and disseminate new knowledge about the complex relationship between alcohol and social and health inequity, particularly in developing countries, and to build the evidence base on how interventions can be appropriately used to target alcohol-attributable disparities across the social gradient. This chapter represents an initial attempt to

FIGURE 2.1 Application of priority public health conditions analytical framework to alcohol-attributable harm



define what is already known, and to identify what more needs to be known and done to reduce worldwide health inequities attributable to alcohol.

Causal pathways linking alcohol and health inequity

While application of the priority public health conditions analytical framework may suggest some new ways to think about alcohol-attributable health inequities, causal pathways involving alcohol differ markedly from those pertaining to other conditions addressed in this volume. While alcohol consumption is an intermediate factor in the causal chain linking social determinants to a variety of end-point health conditions, including cancer, tuberculosis, HIV/AIDS and cardiovascular disease, it also has its own end-point disease states, including alcohol dependence and other alcohol use disorders. In most cases, alcohol consumption has deleterious effects on other disease outcomes, but in some, most notably heart disease, moderate consumption may be protective of health.

Figure 2.1 offers a simplified illustration of how the three top levels in the priority public health conditions analytical framework might be applied to the case of alcohol-attributable health inequities. Two end-points are of interest for this analysis: health outcomes and socioeconomic consequences attributable to alcohol consumption.

The health outcomes include a wide range of chronic diseases and acute conditions, and unintentional and intentional injuries (*7*). Health outcomes include chronic and acute alcohol use disorders, such as alcohol dependence, harmful use, acute intoxication and alcohol poisoning. Among the chronic noncommunicable health conditions, alcohol has a detrimental impact on various cancers (*8*), diseases of the gastrointestinal tract,

FIGURE 2.2 Relationship between per capita purchasing power parity-adjusted GDP and adult consumption (litres) of alcohol per year, 2002 (weighted by adult population size)

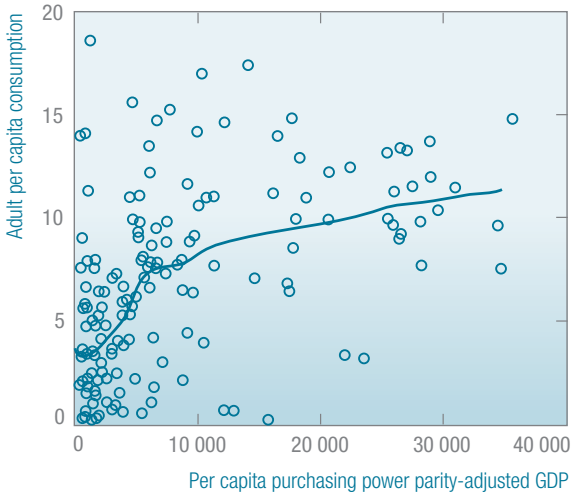


FIGURE 2.3 Relationship between per capita purchasing power parity-adjusted GDP and proportion of male abstainers, 2002 (weighted by adult population size)

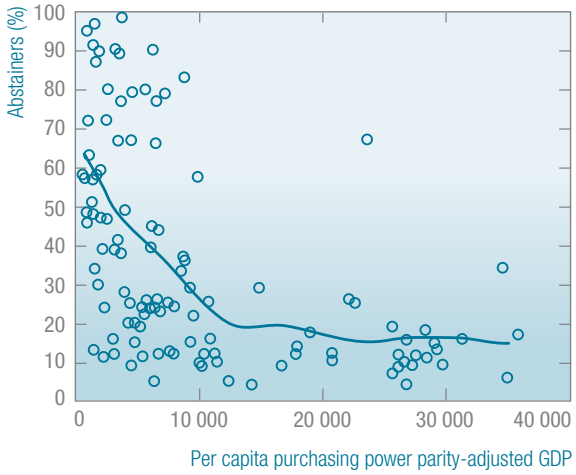


Figure 2.3 shows the relationship between per capita purchasing power parity-adjusted GDP and the rate of abstention in the country's adult male population. Below a per capita GDP of about US$ 5 000 the abstention rate falls sharply with increasing affluence; above that level there is little relationship between the degree of affluence and the rate of abstention.

Interpreting the meaning of these relationships is not straightforward. For Figure 2.2, alcohol consumption may serve as an indicator of the type of goods that become part of everyday life when economies start to prosper. After a certain threshold is reached, the relationship between affluence and alcohol consumption may no longer be as strong because most people can afford alcohol and other commodities.

One interpretation of Figure 2.3 suggests that abstention may be a matter of religious or principled commitment. It may also result from broader cultural practices and norms, or it may reflect extreme poverty, where meagre resources leave funds unavailable for alcohol. This is supported by work showing that between-society differences in rates of abstention account for a large part of the variation between rich and poor subregions in levels of alcohol consumption (*11*). This implies that if the laudable goal of ending extreme poverty throughout the world were attained there is the potential, in the absence of countermeasures, for a substantial increase not only in rates of people who drink but also in rates of heavy drinking.

Health outcomes of alcohol use

Variations between richer and poorer regions of the world in alcohol's contribution to the global burden of disease will now be considered. Table 2.1 compares alcohol-attributable harm across regions of the world using disability-adjusted life years (DALYs), which reflect a combination of the number of years lost from early death and fractional years lost when a person is disabled by illness or injury. The proportion of all DALYs lost attributable to alcohol is higher in the middle- and high-income regions than in the low-income regions. This is partly due to an overall higher burden of disease attributable to other causes in poorer parts of the world. The eastern Europe and central Asian grouping shows the greatest proportion of alcohol-attributable DALYs lost (12.1%).

In absolute terms, or DALYs per 1000 adults, the alcohol-attributable burden remains by far the highest in the eastern Europe and central Asia groupings (36.48 DALYs per 1000 adults), with the lowest tolls found in the industrialized countries and in the Islamic Middle East and Indian subcontinent.

The relative importance of different alcohol-attributable conditions also varies by region. Unintentional injuries account for a higher proportion of the overall disease burden in the two low-income categories, and in the eastern Europe and central Asia category. The burden of DALYs lost from intentional injuries is particularly high in poorer parts of the world where consumption levels are high, and in eastern Europe and central Asia. Alcohol use disorders (for example alcohol dependence, harmful use) account for a large part

Cardiovascular disease: equity and social determinants

3

Shanthi Mendis and A. Banerjee

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3.1 Summary

Cardiovascular disease (CVD) is a leading public health problem that contributes 30% to the annual global mortality and 10% to the global disease burden. While there are downward trends in CVD mortality in most developed countries, the mortality trends in low- and middle-income countries are rising. Evidence on social determinants and inequities related to CVD, mainly from developed countries, indicates an inverse relationship between socioeconomic status and CVD incidence and mortality.

CVD includes coronary heart disease, cerebrovascular disease, rheumatic heart disease and Chagas disease. Rheumatic heart disease and Chagas disease are caused by infections. They continue to be major public health problems in low- and middle-income countries, particularly in poorer social classes. Coronary heart disease and cerebrovascular disease make the largest contribution to the global CVD burden. They develop slowly through life due to atherosclerosis of blood vessels caused by lifelong exposure to behavioural risk factors, tobacco use, physical inactivity and unhealthy diet. An individual's social status influences behavioural risk factors, the development of CVD and outcomes of CVD. Other material and psychosocial factors also have an impact on CVD, operating differentially through the life course. They include limited access to social support, lack of perception of control and job stress, lower health-seeking behaviours, less access to medical care and greater comorbidity.

A balanced combination of cost-effective approaches, targeted at the whole population and particularly at high-risk segments, is required for prevention and control of CVD. Many determinants of behavioural risk factors and CVD lie outside the health domain and have a strong link to root social causes, such as poverty and illiteracy, that also impact health in general. Policy action and structural interventions are needed to address these root social causes so that the exposure and vulnerability of disadvantaged groups to CVD and inequitable CVD outcomes may be reduced. Research is needed to study the impact of interventions to reduce inequities and to understand their political feasibility.

Protecting the cardiovascular health of those in lower socioeconomic strata through population-based prevention strategies is a priority. The needs of those at high risk of CVD should be addressed, with a special focus on disadvantaged sectors. A policy continuum that takes in all sectors that have an impact on cardiovascular risk factors and their determinants, including finance, transport, education, agriculture, social security and youth affairs, is vital. The most appropriate health service entry-point identified for addressing equity issues is primary care. Other components of a public health strategy that addresses inequities in CVD include a life course approach to prevention of risk factors of CVD and their social determinants; measures to ensure equity in the utilization of limited public sector resources; recognition of the participatory role of civil society; and commitment by government to place equity and health at the centre of all government policies.

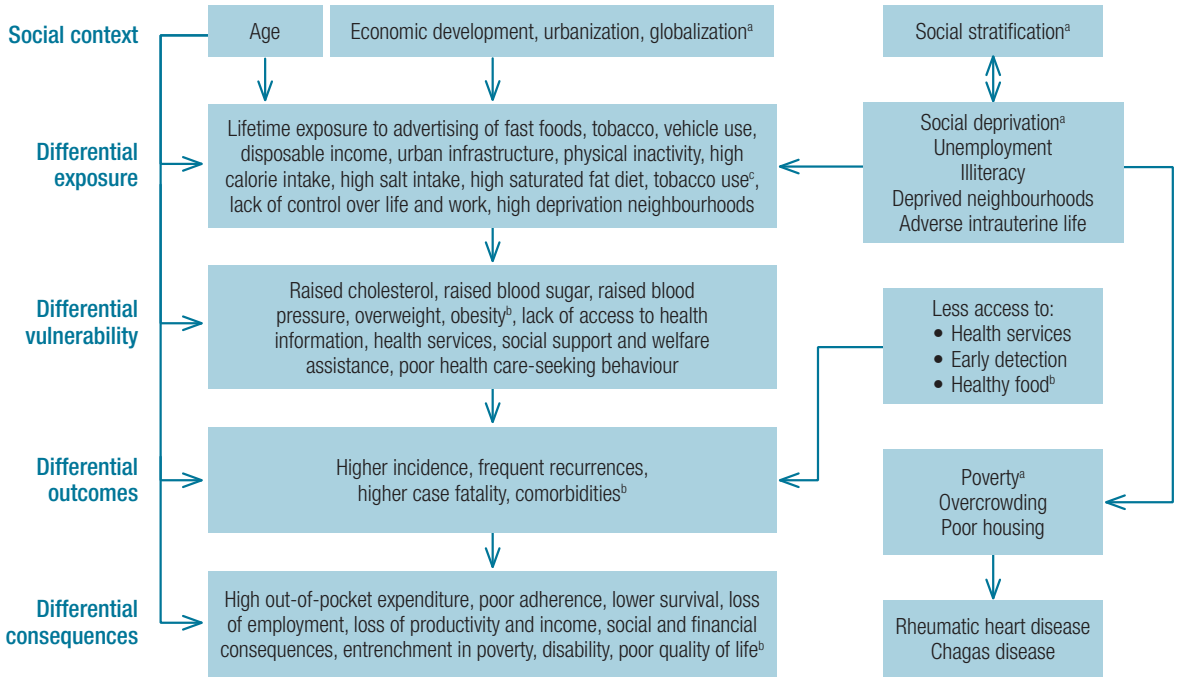
3.2 Introduction: the global CVD burden

Noncommunicable diseases (NCD) were responsible in 2005 for 35 million deaths (60% of all deaths) worldwide; 80% of these deaths occurred in low- and middle-income countries. Between 2006 and 2015, noncommunicable disease deaths are expected to increase by more than 20% in low-income countries, with the greatest increase in sub-Saharan Africa (Table 3.1) (*1*).

CVD (heart disease and stroke) is the leading noncommunicable disease, measured by global mortality and morbidity, and is projected to remain so for the foreseeable future. An estimated 17.5 million people died from CVD in 2005, representing 30% of all global deaths. Of these, 7.6 million were due to coronary heart disease (heart attacks) and 5.7 million to cerebrovascular disease (stroke). Around three quarters of these deaths occurred in low- and middle-income countries (*2*). The conventional risk factors of CVD are tobacco use, raised blood pressure, raised blood cholesterol and diabetes mellitus. Many other factors increase the risk of CVD, including low socioeconomic status, unhealthy diet, physical inactivity, obesity, age, male sex, family history of early onset of coronary heart disease and insulin resistance (*3, 4*). Other social determinants include income distribution, education and literacy, housing and living conditions, employment and employment security, social exclusion and health care services. The relationship between the various causative pathways is complex and gives rise to a number of inequities in cardiovascular health status within and between populations. Certain types of CVD, such as rheumatic heart disease and Chagas disease, are directly linked to poverty, undernutrition, overcrowding and poor housing (*5, 6*).

Although CVD usually manifests itself in middle age, it is a condition with a long incubation period. Changes in blood vessels begin in early childhood and gradually progress to manifest as heart attacks and strokes in later life (*7–9*). Socioeconomic status can influence cardiovascular health differentially along the life course (*10, 11*). In childhood, poor living conditions and the parents' social class have a strong impact on cardiovascular health status. In middle age, risk factors such as

FIGURE 3.1 Conceptual framework for understanding health inequities, pathways and entry-points



Determinants:

a. Government policies: influencing social capital, infrastructure, transport, agriculture, food.

b. Health policies at macro, health system and micro levels.

c. Individual, household and community factors: use of health services, dietary practices, lifestyle.

TABLE 3.5 Main patterns of social gradients associated with CVD

Main patterns	Examples
Changing direction of gradient	In the past CVD was considered to be a disease of affluent countries and the affluent in low-income countries. While CVD trends are declining in developed countries, the impact of urbanization and mechanization has resulted in rising trends of CVD in developing countries. With economic development the prevalence of cardiovascular risk factors will shift from higher socioeconomic groups in these countries to lower socioeconomic groups, as has been the case in developed countries (*94*).
Monotonous	The risk of late detection of CVD and cardiovascular risk factors and consequent worse health outcomes is higher among people from low socioeconomic groups due to poor access to health care. This gradient exists in both rich and poor countries (*95, 96*).
Bottom-end	People with coronary heart disease of a lower socioeconomic status are more likely to be smokers and more likely to be obese than others. They usually have higher levels of comorbidity and depression and lower self-efficacy expectations, and are less likely to participate in cardiac rehabilitation programmes (*97*).
Top-end	In some countries, upper-class people gain preferential access to services even within publicly-funded health care systems compared to those with lower incomes or less education (*98*).
Threshold	Some types of CVD, such as Chagas disease and rheumatic heart disease, are associated with extreme poverty due to poor housing, malnutrition and overcrowding (*5, 6*).
Clustering	In low- and middle-income countries cardiovascular risk profiles are more unhealthy in urban than in rural populations because of the cumulative effects of higher exposure to tobacco promotion, unhealthy food and fewer opportunities for physical activity due to urban infrastructure (*2, 32*).
Dichotomous	In some populations women are much less exposed to certain cardiovascular risk factors, such as tobacco, due to cultural inhibitions (*99*).

Health and nutrition of children: equity and social determinants

4

Fernando C. Barros, Cesar G. Victora, Robert W. Scherpbier and Davidson Gwatkin[1]

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4.1 Summary

Children under 5 years of age are especially susceptible to the effects of socioeconomic inequities, due to their dependence on others to ensure their health status. This review relies on the framework developed by the Priority Public Health Conditions Knowledge Network of the Commission on Social Determinants of Health (see Chapter 1). The main data sources included over 100 national surveys and a systematic review of the post-1990 literature on child morbidity, mortality, nutrition and services utilization in low- and middle-income countries.

Poor children and their mothers lag systematically behind the better-off in terms of mortality, morbidity and undernutrition. Such inequities in health outcomes result from the fact that poor children, relative to those from better-off families, are more likely to be exposed to disease-causing agents; once they are exposed, they are more vulnerable due to lower resistance and low coverage with preventive interventions; and once they acquire a disease that requires medical treatment, they are less likely to have access to services, the quality of these services is likely to be lower, and life-saving treatments are less readily available. There were very few exceptions to this pattern – child obesity and inadequate breastfeeding practices were the only conditions more often reported among the rich than the poor.

Health services play a major role in the generation of inequities. This is due both to inaction – lack of proactive measures to address the health needs of the poor – and to pro-rich bias – such as geographical accessibility of services and user fees. Evaluations of the equity impact of health programmes and interventions are scarce. Nevertheless, those available show that innovative approaches can effectively promote equity through, for example, prioritizing diseases of the poor; taking the pattern of inequity into account; deploying or improving services where the poor live; employing appropriate delivery channels; removing financial barriers; and monitoring implementation, coverage and impact with an equity lens.

Tackling inequities requires the involvement of various programmes and stakeholders, both within and outside the health sector, that can help address social determinants. This review shows that there are many intervention entry-points, providing room for different sectors to contribute. Actors involved in any given approach need to realize that their efforts constitute only part of the solution, and they must support the work of those promoting complementary approaches. Finally, there is a need for a general oversight function to ensure that all relevant issues are considered.

In light of the mandate of the World Health Organization (WHO), this review was purposefully biased towards health sector interventions. Policy-makers, planners and health workers should be aware that the way in which they plan and implement preventive and curative interventions often contributes to further increasing inequities. Mainstreaming equity considerations in the health sector is essential for ensuring that those involved become part of the solution, rather than part of the problem.

4.2 Introduction

Background to inequities in child health and nutrition

Equity in health implies that ideally all individuals should attain their full health potential. Socioeconomic inequities include differences that are "systematic, socially produced (and therefore modifiable) and unfair" (*1, 2*). "Health inequities result from unequal distribution of power, prestige and resources among groups in society" (*3*). Because the physical and mental development of young children is still under way and they depend on others to ensure their health, they are particularly susceptible to socioeconomic inequities that lead to marked differentials in morbidity and mortality.

Most deaths of children under 5 years of age in the world are caused by a few conditions, namely neonatal causes, pneumonia, diarrhoea, malaria, measles and HIV/AIDS (*4*), with malnutrition being an underlying cause in about a third of these deaths (*5*). Child deaths are usually the result of the joint action of several risk factors (*4*), a fact that has to be taken into consideration when understanding their determination and planning their prevention.

The deaths of children are not evenly distributed, but occur mainly in poor countries; 90% of these deaths take place in only 42 countries (*4*). Between-country differentials in child undernutrition are also unacceptably large (*6*). Although under-5 mortality rates have declined recently in most low- and middle-income countries, equity analyses have shown that the mortality gap between rich and poor countries, and between rich and poor children within most countries, is widening, as reductions tend to be greater among the better-off (*7–9*).

Addressing socioeconomic inequities in child health and nutrition will be essential for achieving the first (poverty and hunger), fourth (child survival) and sixth (malaria, HIV and other diseases) Millennium Development Goals. A mathematical simulation showed that

Diabetes: equity and social determinants

5

David Whiting, Nigel Unwin and Gojka Roglic

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5.1 Summary

Three to four percent of the world's population has diabetes, which leads to a markedly increased risk of blindness, renal failure, amputation and cardiovascular disease, and reduces average life expectancy by 10 or more years. Currently, 70% of people with diabetes live in low- and middle-income countries, and while diabetes is increasing the world over, its greatest increase will be in these countries, more than doubling over the next 25 years.

There is strong social patterning in the incidence of type 2 diabetes, which accounts for over 90% of all diabetes. This arises through differential exposure to "obesogenic environments", leading in particular to lower levels of physical activity and the consumption of excess calories. Some ethnic groups, for reasons that are not fully understood, are particularly vulnerable to such environments. In the poorest countries type 2 diabetes tends to be commoner in the better-off, but with economic development this is soon reversed, with the incidence being highest in the poor. The incidence of type 1 diabetes, the etiology of which is not well understood, is not socially patterned. The outcomes and consequences of both type 1 and type 2 diabetes tend to be worse in the poor in all countries. This is particularly the case in countries where access to health care is dependent on the ability to pay.

The evidence base for the prevention of type 2 diabetes and the prevention of complications in all types of diabetes is relatively strong. However, evidence on how to intervene to reduce socioeconomic inequalities in diabetes incidence, outcomes and consequences is much less comprehensive. Coordinated action will be needed from the level of international and national policy, particularly to reduce exposure to obesogenic environments, down to local measures, such as improving access to and the quality of care in individual health facilities. Interventions will need to be fully evaluated for their impact on reducing socioeconomic inequalities, and redesigned and re-evaluated accordingly.

5.2 Introduction

Background

There is a tendency to think of some conditions as diseases of poverty, and conversely others as diseases of affluence. Causes of maternal and infant mortality, malaria and tuberculosis are strongly related to extreme poverty. In contrast, diabetes (type 2 diabetes in particular) is often thought of as a disease of affluence, affecting rich countries more than poor, and within poor countries affecting the better-off sections of the population more than the less well off. While this characterization of diabetes is not entirely without basis, it is a deeply misleading oversimplification. For example, over 70% of the world's population with diabetes live in low- and middle-income countries; the prevalence of diabetes in some of the world's poorest cities is as high, or higher, than in high-income countries; and the impact of diabetes on individuals and their families is greatest in situations with poor access to health care and no or limited social security.

This chapter begins with a brief description of diabetes and its complications and known risk factors. Next is summarized what is known of the social and economic distribution of diabetes, from international comparisons down to socioeconomic groups within countries. The rest of the chapter is structured around the hierarchical causal model of the social determinants of health described in Chapter 1. The diabetes-specific version of this model is shown in Figure 5.4 of this chapter.

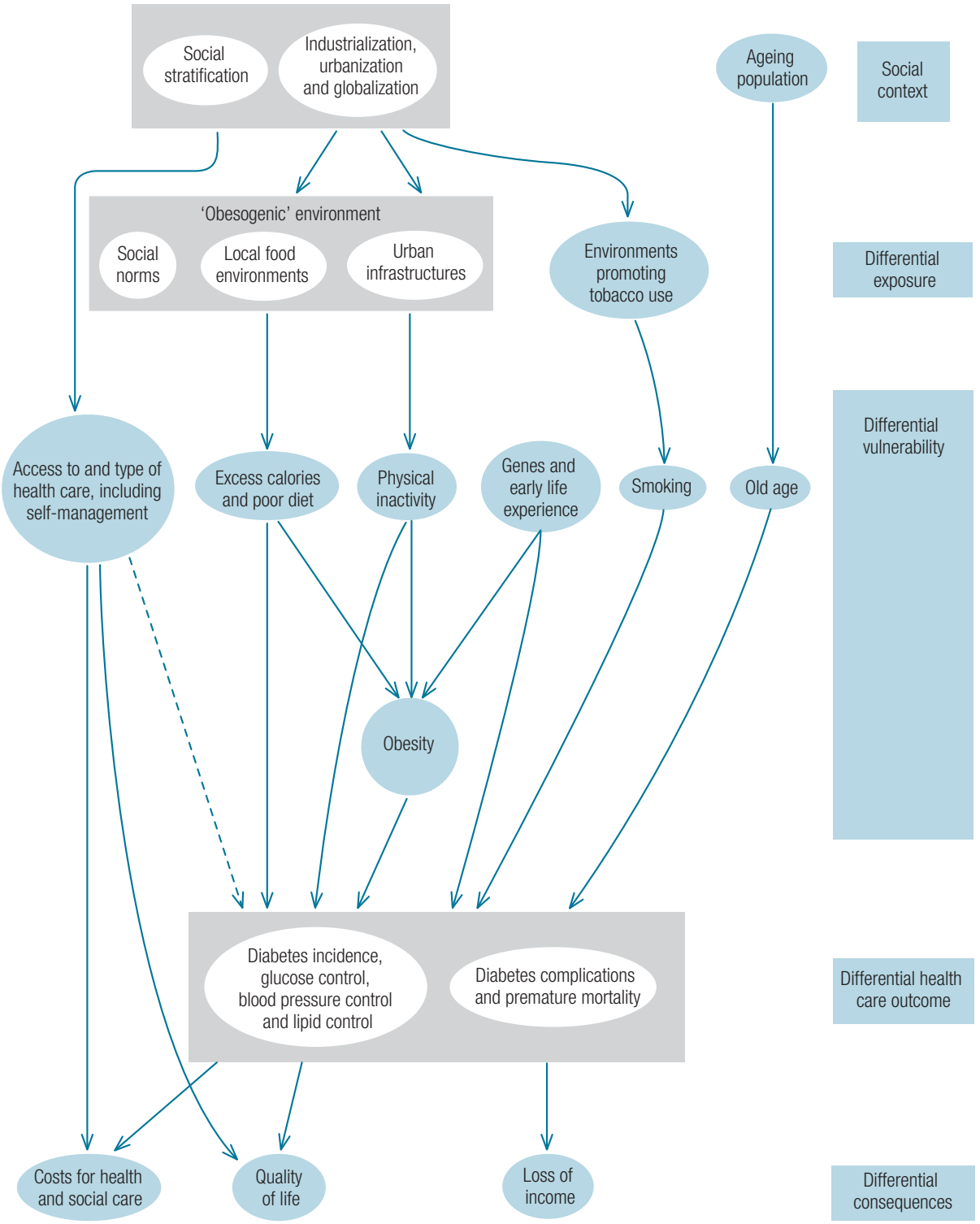
Diabetes: description, classification and risk factors

Diabetes is a disease in which reduced insulin secretion and insulin action lead to chronic hyperglycaemia. This in turn has adverse catabolic effects on carbohydrate, fat and protein metabolism (*1, 2*). Diabetes is classified according to etiological type. There are four main groups: type 1, type 2, gestational and other types (*1*). Most cases of diabetes (95–99%) fall into types 1 and 2, with type 2 the most prevalent form of diabetes, accounting for 80% to over 95% of cases, depending on the population.

In type 1 diabetes insulin secretion is reduced or absent as a result of destruction of the pancreatic beta cells by autoimmune or idiopathic processes. In most populations type 1 diabetes accounts for around 5–10% of cases of diabetes and is usually diagnosed in childhood. Untreated, the total absence of insulin leads to ketoacidosis, which can cause loss of consciousness and, without intervention, death. More than 90% of people who develop type 1 diabetes carry known genetic markers for the disease. Yet, the vast majority of people with genetic markers do not develop type 1 diabetes (*3*). It seems clear that exposure to environmental triggers in genetically susceptible individuals is needed. At present, with poor knowledge of the environmental triggers of type 1 diabetes, there are currently no effective approaches to its prevention.

Type 2 diabetes is characterized by both a reduction in insulin action and a relative deficiency of insulin secretion. The extent of the reduction in action or secretion can vary considerably between individuals. It is clear from family and twin studies that the risk of type 2

FIGURE 5.4 Overview of diabetes-related pathways



Food safety: equity and social determinants

6

Jean-Louis Jouve, Jens Aagaard-Hansen and Awa Aidara-Kane

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6.1 Summary

Foodborne diseases are the illnesses, generally infectious or toxic in nature, caused by pathogenic agents that enter the body through the ingestion of food. The incidence of foodborne diseases varies greatly between countries, and low-income countries bear the brunt of the problem. However, episodes of foodborne illness continue to constitute a challenge to public health even in industrialized countries, despite advances in food hygiene, food protection and food control. Inappropriate modes of food consumption, handling and production entail exposure to food hazards, disproportionately affecting the most disadvantaged groups. Certain conditions, such as food insecurity, malnutrition and comorbidity, may increase vulnerability to unsafe food items. At the structural level a number of social determinants (ethnicity, gender, education, migration, trade, urbanization, demographic factors and poverty) imply inequity in relation to food safety. Accordingly, this chapter leads to three main lines of recommended interventions: strengthening food safety systems; addressing the conditions leading to increased vulnerability; and addressing the root causes of inequity in food safety.

6.2 Introduction

Food safety: scope and burden

Foodborne diseases are the illnesses, generally infectious or toxic in nature, caused by pathogenic agents ("hazards") that enter the body through the ingestion of food. Foodborne diseases are a major cause of suffering and death throughout the world. Besides direct health consequences, the economic costs associated with foodborne diseases represent a significant economic burden on consumers, the food industry and governments. Foodborne illnesses can also reduce labour productivity, impose substantial stress on the health care system, and reduce economic output as a result of loss in confidence in the food production and marketing system. Food can be the vector of a large number of hazards. More than 200 known diseases can be transmitted by food (*1*). Table 6.1 provides some examples of broad categories of foodborne hazards.

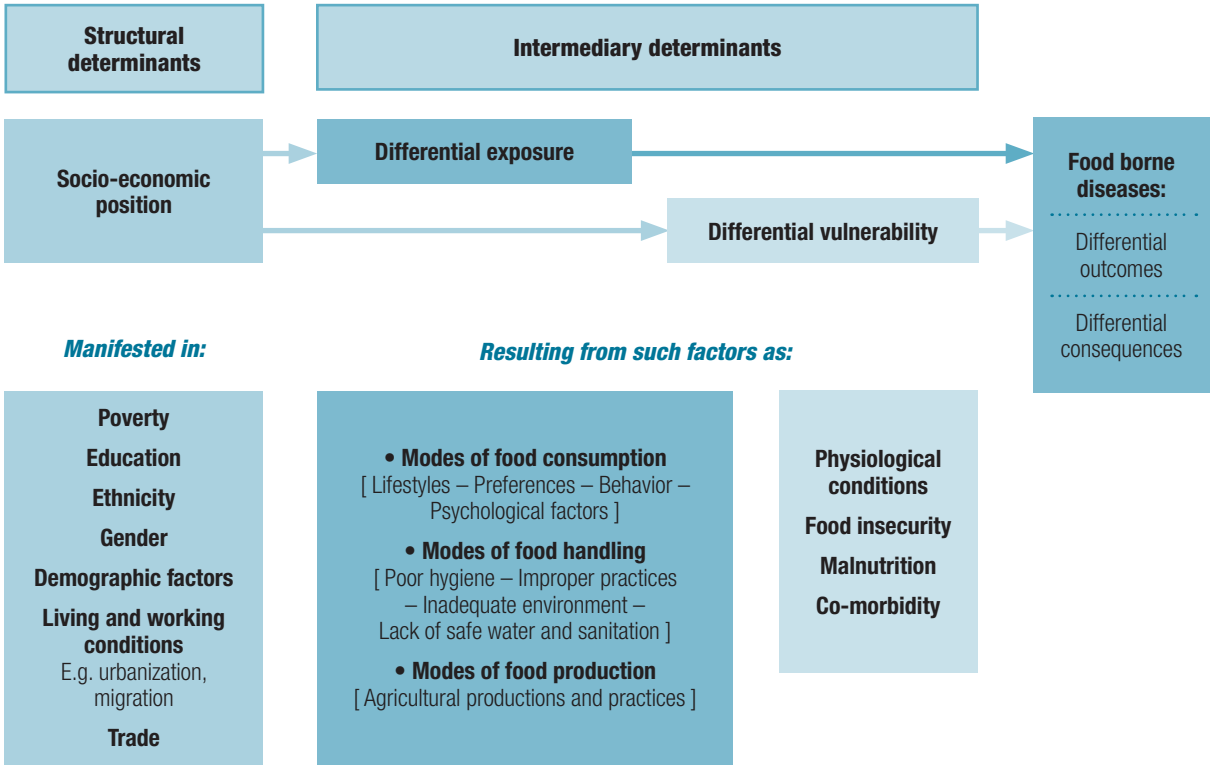
Foodborne diseases share some common characteristics regarding their determinants and possible preventive interventions:

- Infectious foodborne biological pathogens are incidentally introduced into foods following improper hygiene and sanitation at any stage in food production, collection, processing, transport, handling, distribution and preparation for final consumption.
- A large part of microbiological or chemical foodborne diseases are directly (for example from drinking-water pollution) or indirectly (for example from air, water or soil through plants or animals) attributable to environmental factors.
- Infectious foodborne pathogens have, in most cases, an animal reservoir from which they can spread directly or indirectly to humans (*2*). Infectious foodborne diseases are very often foodborne zoonoses.

TABLE 6.1 Examples of foodborne hazards

Type of hazard	Examples
Biological hazards	Zoonotic agents that may enter the food chain (e.g. *Brucella, Salmonella*, prions)
	Pathogens predominantly foodborne (e.g. *Listeria monocytogenes*, *Trichinella, Toxoplasma*, *Cryptosporidium, Campylobacter jejuni, Yersinia enterocolitica*)
	Established pathogens emerging in new vehicles or new situations (e.g. *Salmonella enteritidis* in eggs, hepatitis A virus in vegetables, Norwalk/Norwalk-like virus in seafoods)
	Pathogens newly associated with foodborne transmission (e.g. *Escherichia coli* O157:H7, *Vibrio vulnificus*, *Vibrio cholerae*, *Cyclospora cayetanensis*)
	Antimicrobial-resistant pathogens (e.g. *Salmonella typhimurium* DT104)
Chemical hazards	Naturally occurring toxicants (e.g. phytoestrogens, marine biotoxins, mycotoxins)
	Environmental or industrial contaminants (e.g. mercury, lead, polychlorinated biphenyls, dioxins, radionucleides)
	Residues of agricultural chemicals, veterinary drugs, surface sanitizers
	Toxic compounds generated during food processing (e.g. polycyclic aromatic hydrocarbons, acrylamide)
	Toxic substances derived from packaging or other materials in contact with foods
	New issues in toxicology, including allergenicity, endocrine disruption (e.g. phytoestrogens, pesticide residues), mutagenicity, genotoxicity, immunotoxicity
Physical hazards	*(not considered in this chapter)*

FIGURE 6.1 Social determinants of food safety



equity. Where food safety is concerned, this view invites two approaches: first, an exploration of which social determinants may interact, and how, with the safety of the food consumed; and second, a translation of this information into interventions that will contribute to a more equitable approach to ensuring food safety.

To guide analysis of linkages between social determinants of health and food safety a conceptual framework was developed, adapted and simplified from the model of the Commission on Social Determinants of Health (Figure 6.1). It outlines the social determinants described later in this chapter and will help identify the main entry-points to related policies and interventions. The figure shows how the structural determinants that generate social stratification (left) may further operate through more specific intermediary determinants (centre) to result in differential outcomes and consequences of foodborne diseases, leading to differential exposure to foodborne hazards and vulnerability to conditions that compromise food safety (see next section). The structural and intermediate determinants may overlap or operate at several levels; for example, living and working conditions or trade are related to socioeconomic context and position and also operate at the level of exposure.

As the focus of this chapter is specifically on inequities related to food safety, not all food safety issues are comprehensively addressed. Though food insecurity is one of the most important global public health problems, it is considered in this chapter only in so far as it creates inequities with regard to accessing safe food.

6.3 Analysis: social determinants of food safety

This section will provide an overview of social determinants of food safety. The three main subsections will deal with the factors leading to differential exposure; the causes of increased vulnerability; and differences in socioeconomic context and position.

Modes of food consumption, handling and production

The analysis of potential pathways leading to differences in exposure to foodborne diseases generally proceeds through the various chronological links in the food chain, including farm inputs, farm production, collection (harvest or slaughter), processing, transport and distribution (wholesale, retail or food services),

Mental disorders: equity and social determinants

7

Vikram Patel, Crick Lund, Sean Hatherill, Sophie Plagerson, Joanne Corrigall, Michelle Funk and Alan J. Flisher[1]

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1 This chapter is an output from a project funded by the United Kingdom Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

7.1 Summary

As with most noncommunicable diseases, the etiology of mental disorders is multifactorial, with risk determined by an interaction of genetic, other biological, psychological and social determinants. The large variation in the prevalence of most mental disorders between and within countries suggests that the social determinants have particular salience. This chapter focuses on social determinants with emphasis on evidence from low- and middle-income countries, and gives particular attention to two examples of mental disorders: depression and attention deficit hyperactivity disorder (ADHD). These disorders were selected because they are each associated with a considerable burden, and there is a substantive evidence base that interventions for these disorders are effective and feasible.

There are significantly increased rates of depression among low socioeconomic groups, and exposure to risk factors is disproportionately high in contexts characterized by social disadvantage where vulnerable groups are overrepresented. There is convincing evidence of an association between depression and stressful life events; exposure to violence and other crimes; chronic physical ill-health; low levels of educational attainment; conflict; disasters; stressful working environments; and female gender. Additionally, reasonable evidence implicates discrimination, income inequality, food insecurity, hunger, unemployment, toxins, urbanization, lack of housing, overcrowding, low social capital, poor sanitation and built environment, and minority ethnicity. Overall rates of mental health service use are generally lower amongst the disadvantaged. Low mental health literacy and stigma may reduce the ability of people with depression to use treatment services effectively.

Further, depression is associated with negative physical health outcomes, including cardiovascular disease, type 2 diabetes mellitus, injuries, HIV/AIDS and various perinatal and reproductive conditions; consequences of these comorbidities may also show social gradients. While increased risk of ADHD is associated with lower socioeconomic status and lower parental education in high-income countries, research on ADHD from low- and middle-income countries is scarce and inconclusive. The expression of genetic susceptibility to ADHD appears to be moderated by environmental exposures. Fetal or neonatal hypoxia, traumatic brain injury, epilepsy and antiepileptic medications, and HIV infection are all associated with ADHD, and these exposures all show social gradients. Also, male gender appears to confer additional risk. Children with ADHD experience adverse academic outcomes.

Put simply, mental disorders are inequitably distributed, as people who are socially and economically disadvantaged bear a disproportionate burden of mental disorders and their adverse consequences. A vicious cycle of disadvantage and mental disorder is the result of the dynamic interrelationship between them. This chapter reviews a wealth of evidence on interventions that can break this cycle, by addressing both upstream social determinants and vulnerabilities, and downstream health outcomes and consequences through a combination of population- and individual-level actions. A key goal is for health care systems to be responsive to the mental health needs of the population. Efforts to increase coverage of cost-effective interventions must explicitly target disadvantaged populations and health impact assessments of macroeconomic policies must consider mental health outcomes. Evidence from low- and middle-income countries remains relatively scarce and more contextual research is required to inform mental health policy and practice. In particular, research is needed regarding the impacts of social and economic change on mental disorder, and the mechanisms through which protective factors strengthen resilience and promote mental health. Longitudinal monitoring of population mental health is crucial for this purpose.

7.2 Introduction

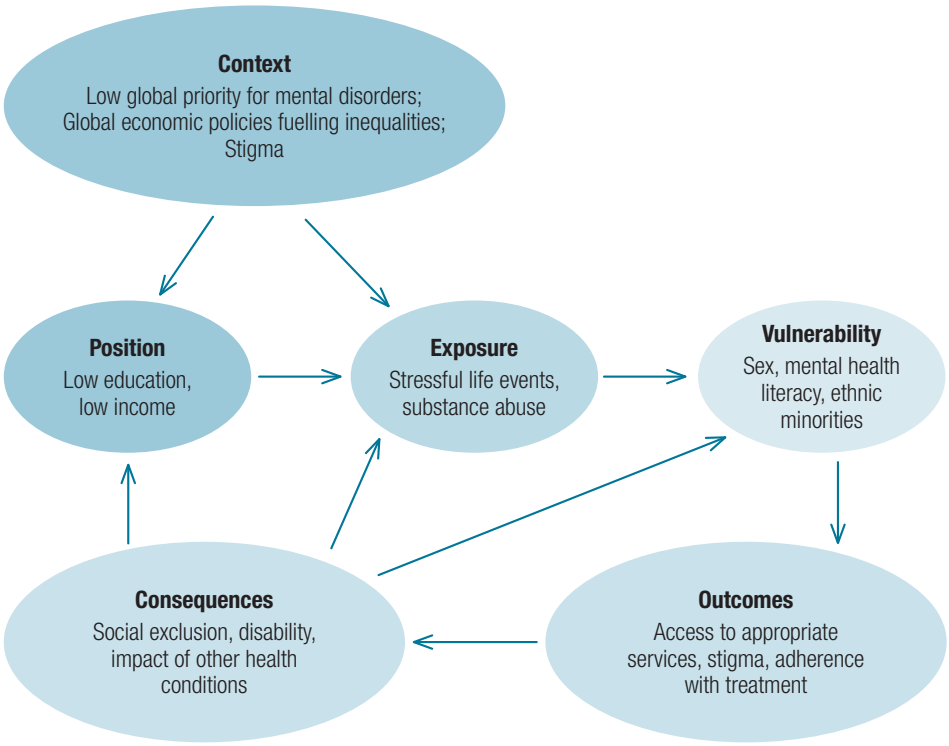
Mental health and mental disorders

Mental health is integral to the definition of health of the World Health Organization (WHO): "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". A definition of mental health that is applicable across the lifespan is as follows (*1*):

> The successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with adversity; from early childhood until later life, mental health is the springboard of thinking and communication skills, learning, emotional growth, resilience, and self esteem.

This definition of mental health is consistent with its wide and varied interpretation across cultures. It is self-evident that, as with the broad definition of health, mental health is more than the absence of mental disorder. "Mental disorders" are manifested by clusters of symptoms or illness experiences, which reflect impaired mental health. Typically, these symptoms (or experiences) are distributed widely in a population but when they occur in clusters, and are associated with impairment in one or more domains of functioning, they are considered to be signs of clinically significant mental disorder.

FIGURE 7.1 Vicious cycle of social determinants and mental disorders



associations, namely that depression affects the rate of other health conditions; that some health conditions affect the risk of depression; or that depression affects treatment and outcome for other health conditions. The adverse health consequences of depression may be differentially observed in populations according to the differential risks to which groups are exposed, their differential vulnerabilities, and socioeconomic context and position. This reinforces the inequities in the distribution of other health conditions and can carry important intergenerational consequences. For example, the impact of maternal depression on infant growth and development outcomes is greater in mothers from low-income groups (*11, 61*).

The differential consequences of depression maintain a vicious cycle of depression and deprivation (Figure 7.1) through the following pathways: increased financial cost of treatment and medication for depression (*62, 63*); increased cost to households (caregiver time and opportunity costs) (*62, 63*); loss of earnings, as a result of reduced productivity due to depressive episodes (*62, 64*); reduced ability to work (domestic and paid); stigma and reduced access to health care (*57, 58, 65*); and substance abuse (*66–68*). In effect, a vicious cycle of deprivation and depression is established with differential effects on the poor (*69*), who have limited access to evidence-based, cost-effective treatments and to interventions that might address social determinants. The effect of this vicious cycle is inequitable across socioeconomic positions. For example, the impact of disability on loss of earnings would be greater in those who work in jobs with less sickness benefits for mental disorders, and the lack of access to affordable care leads to more out-of-pocket expenditure for depression, which will have greater adverse consequences for poorer families.

Attention deficit hyperactivity disorder and its social determinants

Attention deficit hyperactivity disorder (ADHD) as defined by the American Psychiatric Association (*70*) is characterized by symptoms in one or both of two core domains: inattention and hyperactivity-impulsiveness. Inattention can be manifest by features such as an inability to sustain attention in tasks or play activities, and having difficulty in organizing tasks and activities; hyperactivity by fidgeting, running about and talking excessively; and impulsiveness by often interrupting and intruding on others. Hyperkinetic disorder (HKD) as defined by the *International Statistical Classification of Diseases and Related Health Problems* (*4*) can be regarded

Neglected tropical diseases: equity and social determinants

8

Jens Aagaard-Hansen and Claire Lise Chaignat[1]

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1 The authors would like to acknowledge the valuable input of reviewers (especially Susan Watts and Erik Blas), and Birte Holm Sørensen for her comments regarding the potential of social determinants as indicators of multiendemic populations. Also thanks to staff members of the WHO Department of Neglected Tropical Diseases for their support and advice.

8.1 Summary

The neglected tropical diseases (NTDs) are very heterogeneous and consequently the analysis of inequity and social determinants is extraordinarily complex. The result is a pattern where the various NTDs are clustered in different ways. This leads to six recommended actions, all of which relate mostly to preventive and promotive measures. In each case the right of vulnerable and marginalized groups to be heard and to exert political influence should be ensured.

Action 1: Addressing water, sanitation and household-related factors (the "preventive package"). The analysis shows overwhelming evidence of how the intermediary social determinants of water and sanitation, and housing and clustering, determine NTDs. Consequently, there is a need to address these risk factors in endemic communities to provide sustainable prevention for clusters of NTDs.

Action 2: Reducing environmental risk factors. Environmental factors are essential determinants for many of the NTDs. These factors are often introduced by humans, either directly or indirectly. Planning based on health impact assessments for new projects and mitigating revisions of existing schemes are needed in order to control NTDs.

Action 3: Improving health of migrating populations. Migration encompasses the movements of nomads, labour migrants, people subjected to forced resettlement and refugees from natural disasters or armed conflict. Their movements influence exposure and vulnerability to some NTDs, and access to health care systems is reduced. The particular NTD issues that relate to these groups should be addressed in ways that are tailored to local conditions (patterns of morbidity, mobility, environmental and sociocultural factors).

Action 4: Reducing inequity due to sociocultural factors and gender. Sociocultural factors, which are often closely linked to gender roles, interact with NTDs in various ways. In some cases NTDs incur added burdens due to stigma, isolation and other negative consequences. These factors may also reduce the acceptability of health services, leading to differential health care outcomes. There are unexplored potential advantages in addressing these issues from a multidisease perspective.

Action 5: Reducing poverty in NTD-endemic populations. Poverty emerges as the single most conspicuous social determinant for NTDs, partly as a structural root determinant for the intermediary social determinants and partly as an important consequence of NTDs, either directly (leading to catastrophic health expenditure) or indirectly (due to loss of productivity). Consequently, poverty should be addressed both in general poverty alleviation programmes for NTD-endemic populations and more particularly by ensuring affordable treatment.

Action 6: Setting up risk assessment and surveillance systems. The NTDs are characterized by their focality determined by the complex combinations of environmental and social determinants. Pockets of multiendemic population segments are likely to "disappear" within statistical averages and must be identified as a means to address inequity and in order to direct curative or preventive interventions to NTD hot spots, thereby increasing efficiency. Cross-disciplinary risk assessment and surveillance systems should be established based on combinations of epidemiological, environmental and social data, providing not only early warnings for epidemics, but also evidence for long-term planning under more stable conditions.

8.2 Introduction

Neglected tropical diseases

This chapter considers the so-called neglected tropical diseases (NTDs) (*1–3*), focusing on the 13 diseases covered by the World Health Organization (WHO) Department of Neglected Tropical Diseases: Buruli ulcer, Chagas disease, cholera, dengue fever (including dengue haemorrhagic fever), dracunculiasis, lymphatic filariasis, human African trypanosomiasis, leishmaniasis, leprosy, onchocerciasis, schistosomiasis, soil-transmitted helminths and trachoma. From a biomedical perspective, the 13 NTDs are very heterogeneous. Box 8.1 gives a brief description of each disease.

An aggregated measure of 11 of the 13 NTDs (omitting cholera and dengue fever) ranks sixth among the 10 leading causes of disability-adjusted life years,[2] ahead of malaria and tuberculosis (*4*). Estimates are, however, uncertain, and recent studies argue that incidences and impacts of schistosomiasis (*5*) and trachoma (*6*) have been underestimated. Researchers have mapped the global distribution of trachoma (*7*) and lymphatic filariasis, onchocerciasis, schistosomiasis and soil-transmitted helminths (*8*). Brooker et al. (*9*) have attempted to map helminth infection in sub-Saharan Africa. De Silva et al. (*10*) add an interesting time dimension to the analysis of soil-transmitted helminths, showing the trend 1994–2003.

2 Disability-adjusted life years (DALYs) reflect a combination of the number of years lost from early deaths and fractional years lost when a person is disabled by illness or injury.

Oral health: equity and social determinants

9

Stella Kwan and Poul Erik Petersen

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9.1 Summary

Oral health enables people to speak, eat and socialize without active disease, discomfort or embarrassment. However, poor oral health is still a major burden for populations throughout the world, and is particularly prevalent among disadvantaged population groups. Social gradients occur for all oral disease conditions, and appear to be persistent over time. Research on social inequity in oral health is more substantial for developed countries, and the need is high for systematic studies of social gradients in developing countries. With regard to the socioepidemiology of oral health, the variables mostly chosen as indicators of socioeconomic status are social class, education, employment status, personal income, urbanization and gender. These factors result in differential exposure and vulnerability to oral health problems, with differential health care outcomes and consequences. Oral diseases share common risk factors with several chronic diseases.

The good news is that oral diseases are preventable, and that social inequity in oral health is avoidable. Intervention strategies that acknowledge the socioeconomic context and related risk factors offer most potential for promotion of oral health throughout the whole population. Prevention of oral diseases through public health interventions can be effective; oral health personnel are scarce in low- and middle-income countries, and primary health workers and specially trained ancillary personnel can make valuable contributions to the control of oral disease and the promotion of oral health for all.

9.2 Introduction

Background: global patterns of oral health

Oral health means more than healthy teeth; the health of the gums, oral soft tissues, chewing muscles, palate, tongue, lips and salivary glands are also important. Good oral health enables an individual to speak, eat and socialize without active disease, discomfort or embarrassment. It is integral to general health and well-being (*1*). Oral disease may affect anyone throughout their lifetime, impacting on quality of life.

While general improvements in oral health have been observed among people of industrialized countries over the past few decades, oral disease remains a global problem, particularly among disadvantaged populations in both industrialized and developing countries (*2*). Tooth decay and gum disease are among the most widespread conditions in human populations, and the prevalence of other conditions, such as dental erosion, is on the increase. The effects of oral cancer and noma[1] can be devastating. Tooth loss, as a result of oral disease and trauma caused by accidents and unintentional injuries, may have a profound impact on quality of life, nutritional intake and growth and development in children.

There is a link between oral health and general health, with common risk factors including poor diet, tobacco use and alcohol consumption. Oral disease (such as gum disease) is also associated with such general health conditions as diabetes and HIV/AIDS. Similarly, people who suffer from complex general health problems are at greater risk of oral diseases that, in turn, further complicate their overall health. Some general health diseases manifest in the mouth and oral lesions may be the first signs of some life-threatening diseases, including HIV/AIDS.

Inequities in oral health remain widespread between and within countries, and often mirror inequities in general health. These inequities vary in magnitude and extent (*3*), and are becoming more marked in some countries (*2*). Even in high-income countries with advanced public oral health care, inequities in oral health persist (*4–7*). The social determinants of oral health are largely universal, affecting a range of oral health outcomes and oral health-related quality of life.

The mechanisms and pathways related to oral health are complex and interlinking, with economic, psychosocial and behavioural factors all playing a role, as well as more specific factors such as access to oral health services, provision of safe water and sanitation facilities, optimal exposure to fluorides, availability of oral health products and healthy food supply. Risk factors for oral disease are also relevant to general health and, equally, social determinants of other diseases and conditions have oral health significance. Given that oral and general health share common entry-points, interventions that address issues for multiple programme nodes can be implemented effectively.

Methodology

A literature search was conducted using Medline and Google Scholar, with key words and phrases including oral health, social determinants, inequalities in oral health, poverty, social factors and education. Study selection focused primarily on major national studies and World Health Organization (WHO) international surveys, including the World Health Surveys,

1 Noma is a disease of poverty and malnutrition, compounded by infections such as measles. It occurs particularly among very young children in certain poor African and Asian countries.

Unintended pregnancy and pregnancy outcome: equity and social determinants

10

Shawn Malarcher, L.G. Olson and Norman Hearst[1]

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1 The authors would like to acknowledge the following for their assistance: Matthews Mathai, Brooke Ronald Johnson, Shyam Thapa , Catherine D'Arcangues and Iqbal Shah

10.1 Summary

Control over fertility and access to safe maternity care are fundamental health and human rights and are strongly influenced by social determinants. Using a variety of methods, this chapter examines determinants of unintended pregnancy and its outcomes and of maternal risks from childbearing, including access to care by a skilled birth attendant.

For unintended pregnancy, the analysis in this chapter was based on a broad review of the literature, supplemented by commissioned articles produced by experts. For pregnancy outcome, the analysis focused on determinants of receiving care from a skilled birth attendant because the proximate causes of maternal morbidity and mortality can usually be successfully treated when women have access to basic health care. This included a comparison of country-by-country statistics on access to skilled birth attendance, pregnancy outcome and various social determinants.

Worldwide, 40% of all pregnancies are unintended. Comparison of desired family size to actual fertility demonstrates that, in almost all countries, the burden of unintended pregnancy disproportionately affects the poor. Other disadvantaged groups that have higher rates of unintended pregnancy in many settings include young people, the uneducated, ethnic minorities and migrants.

Women with an unintended pregnancy may be faced with a choice between terminating the pregnancy or an unwanted birth. Unsafe abortion accounts for 13% of maternal deaths worldwide, and disadvantaged women are less likely to have access to safe abortion services and to proper care to treat complications. Poor women also suffer disproportionate consequences of unwanted childbearing, including health and social consequences for themselves and their children. Vulnerability to unintended pregnancy is strongly influenced by access to and use of effective contraception and by exposure to unwanted sex through child marriage and sexual violence. These all have strong social determinants.

The proportion of births with skilled attendance and per capita health expenditure alone account for 90% of between-country variation in maternal mortality. At given levels of health expenditure, achieving equity by income level in coverage with skilled birth attendance is strongly correlated with high levels of overall coverage, as are education for women, higher levels of public (versus private) expenditure on health and an efficiently performing government. Vulnerability to maternal mortality and morbidity despite access to skilled birth attendance depends on the quality of skilled birth attendant services and the availability of backup treatment (especially blood transfusion and caesarean section) for major obstetric complications.

Addressing unintended pregnancy and improving pregnancy outcome will require interventions specifically designed to achieve equity in the availability of all related health services, especially targeting the poor and disadvantaged for access to contraceptive and skilled birth attendant services. Such efforts will be most effective when combined with addressing upstream determinants, such as improving education for women and the effective functioning of the health sector and of government services in general. For future progress, it will be essential to rigorously measure the impact of interventions.

10.2 Introduction

Background

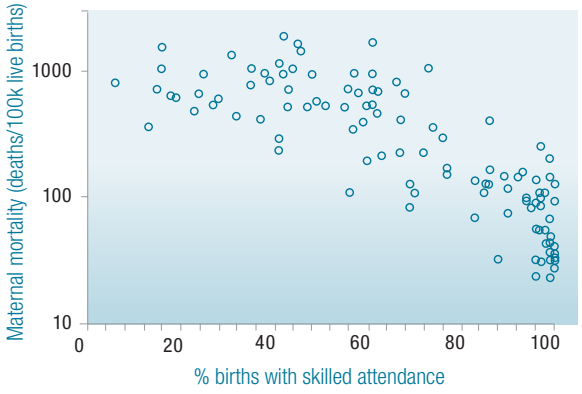
The ability of women and couples to control their fertility and to have basic, safe maternity care is a fundamental health and human right. This has been endorsed by the World Health Assembly (*1*), and the World Health Organization (WHO) affirms that "sexual and reproductive health is fundamental to individuals, couples and families, and the social and economic development of communities and nations" (*2*). As stated by the International Conference on Population and Development in 1994 (*3*): "All couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so."

The broader field of sexual and reproductive health covers many areas that go beyond pregnancy and its outcomes to include, for example, human immunodeficiency virus and other sexually transmitted infections. These are certainly areas of great importance in which social determinants have long been recognized to play a major role, and the entire field is too broad to be covered in a single chapter of this volume. This chapter therefore focuses on one aspect of sexual and reproductive health – the social determinants of unintended pregnancy and of pregnancy outcome.

Despite significant improvements in the lives of women (*4*), high rates of unintended pregnancy continue to detrimentally impact women's and children's health and restrict opportunities for women (*5*). Selection of unintended pregnancy as a focus of this chapter was based on five main principles:

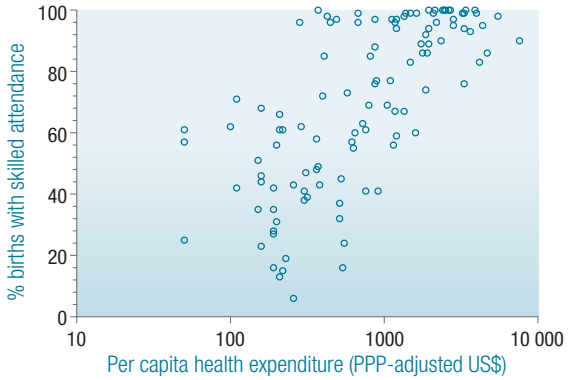
- Ensuring the ability to choose the number and spacing of children as a means of achieving health and development goals has been neglected as part of key

FIGURE 10.4 Maternal mortality plotted against percentage of births with skilled attendance



Note: Each point represents data for a single country.

FIGURE 10.5 Relationship between per capita annual public health expenditure in PPP-adjusted US$ and the percentage of births with skilled attendance for countries with per capita GDP less than US$ 10 000 (PPP)



Note: Each point represents data for a single country.

For the countries in this sample, there is a negative correlation between the percentage of births with skilled attendance and private health expenditure as a proportion of total health expenditure (Spearman rho = –0.33, $P < 0.0001$). Out-of-pocket health expenditure as a proportion of total health expenditure is also negatively correlated with the percentage of births with skilled attendance (Spearman rho = –0.25, $P < 0.003$).

Social and structural determinants such as the size of a country, the proportion of the population living in isolated villages, the state of roads and other infrastructure and the operational efficiency of government all affect the efficiency with which public health funds can be employed. A few countries in central and southern Asia have achieved provision of skilled attendance at birth at close to 100% with expenditure below US$ 100 per capita. But all African countries that achieve close to 90% availability have public health expenditures close to or over US$ 200 per capita.

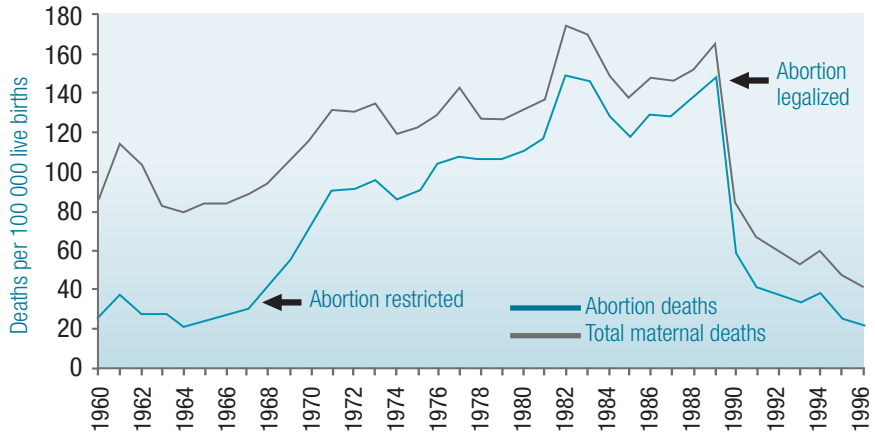
Providing high levels of access to skilled birth attendance with public health expenditure less than US$ 100 per capita, and in Africa US$ 200 per capita, is an unusual achievement, and even this level of expenditure may be unrealistic in some countries. For countries at the lower quartile of GDP in this sample (US$ 1700) public health expenditure of US$ 100 represents 5.9% of GDP, and public health expenditure of US$ 200 represents 11.8% of GDP; for Sierra Leone these expenditures would be 18% and 36% of GDP, respectively. For very poor countries there may be an absolute poverty barrier, and for most of sub-Saharan Africa a relative poverty barrier, to achieving high levels of access to skilled birth attendance.

Social determinants other than health expenditure

Some of the variation in the percentage of births with skilled attendance at any given level of public health expenditure might be explained by the efficiency with which money is spent. The United Nations' Human Development Index (*97*) combines indices of each country's wealth with its success in achieving high life expectancy and high rates of education and adult literacy and can be used to partially correct for countries' overall efficiency of performance. The percentage of births with skilled attendance in each country is quite closely correlated with the Human Development Index ($r = 0.81$, $P < 0.0001$) and with its gender development index ($r = 0.79$, $P < 0.0001$).

Aspects of society related to the position of women are plausible explanations for disproportionate success or failure in providing access to skilled birth attendance, relative to success in increasing life expectancy and providing access to education. The relation of various markers for gender equity to the percentage of births with skilled attendance was examined. Lower private health expenditure as a proportion of total health expenditure, lower total and adolescent fertility rates, a higher proportion of married women using contraception and higher proportions of females at all levels of education were all associated with access to skilled birth attendance. In multivariate models including all factors with significant ($P < 0.005$) univariate associations, the highest partial correlation coefficients were for total fertility rate ($r = –0.30$, $P = 0.03$), log per capita public health expenditure ($r = 0.29$, $P = 0.04$) and female tertiary enrolment ($r = 0.22$, $P = 0.12$). This model accounted for 73% of the variation between countries in access to

FIGURE 10.7 Number of maternal deaths per 100 000 live births, by year, Romania, 1960–1996



Source: Ahman and Shah (*44*).

The Government of Ghana is currently undergoing a similar revolution in service delivery with the Community Health Planning and Services Programme. Initial evaluations of the programme demonstrate improved child survival and fertility indicators among some of the poorest populations in the region (*104*). Evaluators found that the programme's success hinged on the effective use of research, involvement of a wide range of stakeholders and strategic planning (*104*).

Community-based insurance

Cost, especially out-of-pocket expenditure, is in many poor countries a major obstacle for poor women seeking to have their labour attended by a skilled birth attendant. Community-based health insurance can lower out-of-pocket expenditure and improve access to care in poor African communities, with an odds ratio for any professional care in pregnancy of 1.65 (*105*). However, in the same study it was shown that although prepayment increased access to modern health care, most care remained basic, and per capita expenditure on health care increased fivefold. High-quality care may not be affordable for very poor communities even with prepayment systems.

Ensuring sexual and reproductive rights

The number of unsafe abortions can be reduced by decreasing the number of unintended pregnancies or by increasing access to safe abortion. The most effective means of reducing the overall number of abortions (safe and unsafe) is to decrease the number of unintended pregnancies by increasing use of modern contraception (*106*). Changes in legislation that liberalize access to safe induced abortion services have substantial effects on women's health, as demonstrated by recent experience in Romania and South Africa (*16*). After the introduction of restrictive abortion policy in 1966, Romania saw an increase in abortion-attributable mortality (Figure 10.7). By 1989, mortality rates had risen sevenfold and abortion accounted for 87% of maternal deaths. Reversal of the law in 1989 coincided with a drop in mortality by more than half within the first year and by 2002 the mortality rate had been reduced to 9 per 100 000 live births (*16*). South Africa has experienced a similar trend with a 91% drop in abortion-related deaths from 1994 to 1998/2001 after the Choice on Termination of Pregnancy Act went into effect in 1997 (*16*).

In the absence of programmatic effort to expand services, legislation alone may not lead to such dramatic improvements (*16, 107*). Even where safe abortion is not legally restricted, high-quality services may not be widely accessible or providers' skills and methods may be inadequate (*107*). In the United States, for example, where abortion is legal, 34% of women (mostly in rural areas) live in regions with no abortion provider (*108*).

Countries unwilling for whatever reason to legalize safe abortion should at least consider a policy of harm minimization. The legal basis for harm minimization is removal of penalties for a woman who has an abortion, as prefigured in the 1995 Beijing Platform for Action on the human rights of women, to which most WHO Member States are signatories (*109*). In harm minimization programmes, women who have decided to have an illegal abortion are steered towards less unsafe methods of abortion and followed up to ensure identification and treatment of complications. Such programmes are simple to mount and effective (*110*).

Tobacco use: equity and social determinants

11

Annette David, Katharine Esson, Anne-Marie Perucic and Christopher Fitzpatrick

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11.1 Summary

Tobacco use is the single largest preventable cause of death and chronic disease in the world today, causing 5.4 million deaths in 2005. It is a risk factor for six of the eight leading causes of death, including heart disease and several cancers and lung diseases.

Tobacco use disproportionately affects males and lower socioeconomic groups in developed and developing countries, and is increasingly prevalent in poorer parts of the world. In developed countries, multiple indices of social disadvantage contribute independently to smoking status. Poor households in low-income countries carry a particular heavy burden from tobacco use, with significant health, educational, housing and economic opportunity costs. Negative social gradients in tobacco use translate into substantial negative gradients in relation to premature death and disease.

There are two stages of life where inequities in vulnerability and exposure to tobacco use are most evident: during adolescence, with those from lower socioeconomic backgrounds most at risk of taking up tobacco; and during adulthood, especially young adulthood, where tobacco use cessation is more difficult for those from disadvantaged backgrounds. At both stages, vulnerabilities such as social, psychological and physical health issues and disproportionate levels of exposure due to family and peer tobacco use, targeted advertising, social norms permissive to tobacco and less access to affordable cessation services often tip the balance towards tobacco use take-up and continuation.

Tobacco use is supported by a vast network of business and commercial interests. Globalization has facilitated the spread of the tobacco epidemic to the developing world. However, tobacco use is unique in that the World Health Organization (WHO) Framework Convention on Tobacco Control offers a wide-ranging set of affordable, evidence-based demand- and supply-side tobacco control measures impacting at the societal and individual levels.

Key measures include price and tax increases to reduce tobacco availability; structural environmental interventions to reduce tobacco availability and acceptability (tobacco-free environments, banning tobacco advertising and promotion, packaging and labelling initiatives, countermarketing); and structural interventions to address differential vulnerability (increasing access to accurate information, using role models to influence perceptions of tobacco use).

Evidence indicates that these measures are effective and cost-effective in reducing tobacco use. However, despite this, the recommended interventions of the WHO Framework Convention on Tobacco Control remain underimplemented and fail to reach all layers of the population.

An equity lens needs to be applied to all of the Convention's measures. Innovative approaches are needed to ensure that all groups are impacted upon, including those in the informal economy and living in informal settlements not captured by the usual regulatory mechanisms. For example, rallying political support for key strategies, such as raising tobacco taxes and channelling these tax revenues to fund tobacco prevention and cessation for disadvantaged groups, can be an effective way to reduce disparities. Conscious targeting of measures to the most disadvantaged will help overcome social inequities.

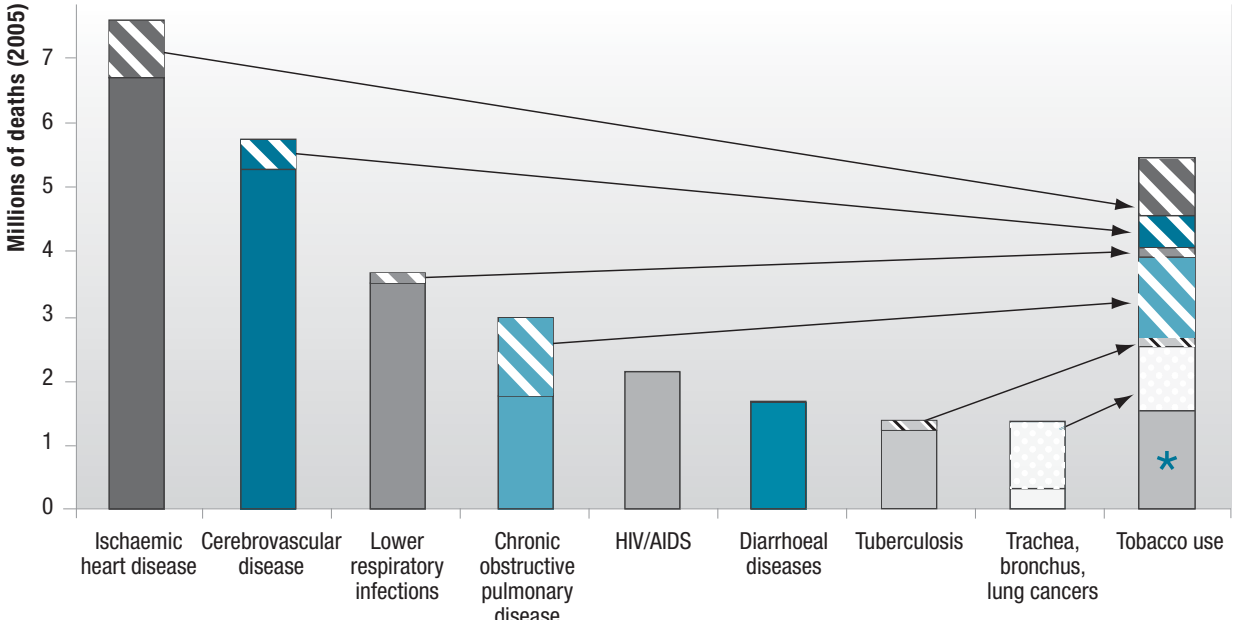
11.2 Introduction

This chapter addresses tobacco use as a priority public health condition. Tobacco use meets the following criteria defining priority public health conditions:

- **It contributes to a large aggregate burden of disease.** Tobacco use is directly implicated in ischaemic heart disease, chronic obstructive pulmonary disease, lower respiratory infections, cerebrovascular disease, tuberculosis, diabetes, and trachea, bronchus and lung cancers. Globally, tobacco use is a risk factor for six of the eight leading causes of death in the world (Figure 11.1) and caused 5.4 million deaths in 2005. This figure is set to rise to 8.3 million by 2030 (*1*).
- **It displays large disparities across and within populations and disproportionately affects certain populations or groups.** Tobacco use is significantly greater among males, and among lower socioeconomic groups within countries at all income levels, and is becoming increasingly prevalent in poorer parts of the world (*1*). Young people are at particular risk of tobacco use. A socioeconomic gradient exists in relation to exposure to second-hand smoke and successfully quitting smoking, with consequent health effects.
- **It is an "epidemic" that has spread throughout the world.** Tobacco use is proliferating through different parts of the world in line with economic development, beginning in industrialized countries and then moving inexorably into eastern Europe, Latin America, Asia and northern Africa, and, increasingly, sub-Saharan Africa. The tobacco industry has targeted low- and middle-income countries, and vulnerable groups such as women and young people (*2*).

Efforts to prevent and control tobacco consumption among disadvantaged groups are not likely to succeed other than through an integrated approach that seeks to reduce underlying social inequities. In this chapter,

FIGURE 11.1 Tobacco use as a risk factor for six of the eight leading causes of death in the world



Hatched areas indicate proportions of deaths related to tobacco use and are coloured according to the column of the respective cause of death.

* Other tobacco-caused diseases: mouth and oropharyngeal cancers, oesophageal cancer, stomach cancer, liver cancer, other cancers, cardiovascular diseases other than ischaemic heart disease and cerebrovascular disease, diabetes mellitus, and digestive diseases.

Source: World Health Organization (*1*).

evidence is presented for classifying tobacco use as a priority public health condition, and interventions are outlined that, taken collectively, comprise a comprehensive response to the tobacco epidemic within the context of the WHO Framework Convention on Tobacco Control (*3*).

11.3 Analysis

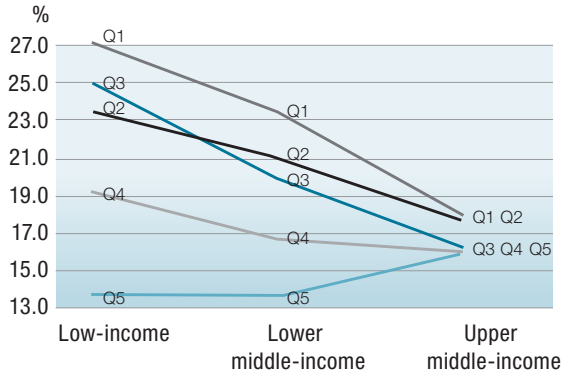
Inequities in tobacco use

Inequities by income

Tobacco use is associated with low socioeconomic status, whether measured by national income, household or individual income, occupational status or level of education, in many countries around the world.

Data from the World Health Survey 2003 indicate that tobacco smoking is most strongly related to household permanent income or wealth (*4*). The poorest individuals in the lowest-income countries appear to exhibit a markedly higher level of tobacco smoking relative to their richer compatriots (Figure 11.2). The inequity tends to become less stark with the level of development of countries. The World Health Survey data also show that poorer groups in low-income countries

FIGURE 11.2 Prevalence of daily tobacco smoking by income group and income quintile



Notes:

1. Q1 to Q5 indicate income quintiles, Q1 being the lowest income group and Q5 the highest income group.
2. The graph was made using average prevalence figures from 44 countries. Prevalence of China and India were removed from these averages to avoid skewed results from their large population weights.

Source: Authors' calculation, using World Health Survey data.

seem to smoke more tobacco in terms of quantity compared to higher-income quintiles. The important conclusion to draw from this and from Figure 11.2 is that poor households in low-income countries are likely to be carrying a heavier burden of the tobacco

Tuberculosis: the role of risk factors and social determinants

12

Knut Lönnroth, Ernesto Jaramillo, Brian Williams, Chris Dye and Mario Raviglione

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12.1 Summary

Background

The main thrust of the tuberculosis (TB) control strategy of the World Health Organization (WHO) is to ensure equitable delivery of quality-assured technologies for the appropriate diagnosis and treatment of TB. However, options for combining curative approaches with preventive efforts that address social determinants of TB have not been fully considered in the context of TB control programmes. Underpinning the curative focus of the current strategy is an epidemiological model that predicts that detecting at least 70% of the incident cases of highly infectious TB and treating at least 85% of them successfully would cause incidence to decline at 5–10% per year. The Stop TB Strategy clearly acknowledges that various social factors put certain vulnerable groups at especially high risk and recommends specific actions to reach and treat these groups effectively. The strategy does not, however, explicitly address the factors behind their vulnerability. The aim of the analysis presented in this chapter is therefore:

- to assess the need to broaden the scope of global TB control and to explicitly incorporate preventive approaches;
- to review proximate TB risk factors and the social determinants behind them;
- to identify entry-points for additional interventions that are not fully covered in the global Stop TB Strategy.

Main findings

Recent analyses of the impact of national TB control programmes that have followed the WHO recommended strategy have shown positive impact on treatment outcomes, prevalence and death rate. However, after several years of successful implementation, TB incidence is not falling as rapidly as expected, and the current rates of decline in prevalence and death rates will be inadequate to achieve all the TB-related Millennium Development Goal and Stop TB Partnership targets. Even if the Stop TB Strategy results in the expected reduction in incidence, the global incidence rate in 2050 is predicted to be about 100 times greater than the elimination target to reduce TB incidence to less than 1 per million population by 2050. These analyses suggest there is a need to both speed up the current strategy and implement additional preventive actions, in particular those that reduce the likelihood that people with latent TB infection will develop active disease. This may be done by addressing proximate TB risk factors as well as their upstream social determinants.

In an analysis applied to the 22 countries with a high TB burden that together account for 80% of the global TB burden, the population attributable fraction for selected TB risk factors that impair the host immune defence was estimated. This analysis suggested that HIV infection, malnutrition, smoking, diabetes, alcohol abuse and indoor air pollution may all contribute substantially to the population-level risk. Those in lower socioeconomic groups are on average more exposed to these risk factors. They are also more likely to be exposed to tuberculosis bacilli through contact with people with active TB disease or through living and working in crowded and poorly ventilated conditions. Many TB risk factors are prevalent among the urban poor and this may explain the particularly high TB burden in many metropolitan areas.

Additional intervention entry-points

TB vulnerability is thus influenced directly by a set of proximate risk factors, which are in turn related to the individual's socioeconomic status, and indirectly by broader processes of social and economic change. Additional entry-points for interventions to reduce vulnerability can therefore be identified on several levels, including:

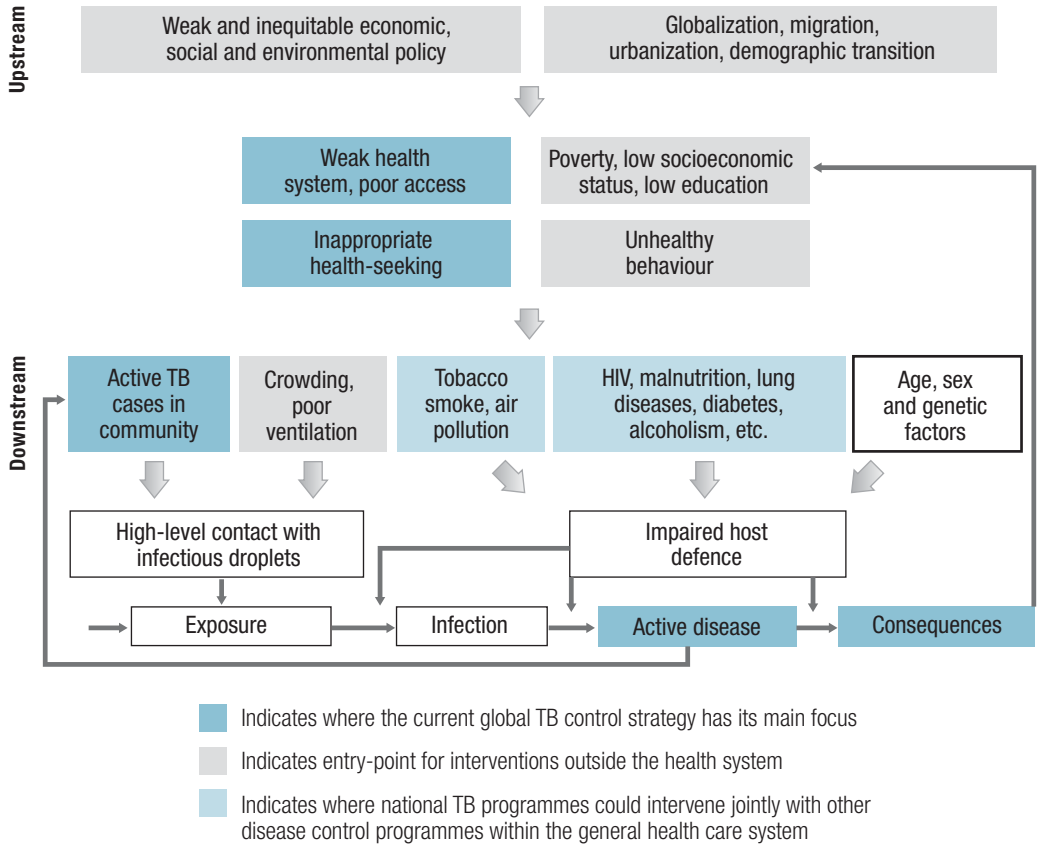
Programmatic public health actions

Such actions would aim to improve management of comorbidity and to reduce the prevalence of HIV, malnutrition, smoking, diabetes, alcohol abuse and indoor air pollution. Interventions to address these risk factors would not be the responsibility of national TB programmes alone. Rather, the role of such programmes would be to help analyse the relative importance of different risk factors in different settings and establish or improve collaborative interventions with other public health programmes. This could also include intensified surveillance efforts coupled with TB screening of people exposed to particular risk factors and for whom treatment of latent TB infection might be appropriate.

Health systems strengthening

Public health programmes that address the above conditions depend on a well-functioning health system. If national TB programmes help to strengthen health systems this will further improve TB diagnosis and treatment while helping to address TB risk factors. Encouraging close collaboration between national TB programme services and other clinical or preventive services concerned with TB risk factors may further strengthen both the general health care system and TB control.

FIGURE 12.5 Framework for downstream risk factors and upstream determinants of TB, and related entry-points for interventions



fuels in dwellings with poor ventilation has been associated with higher risk of TB disease (*117, 118*). There is limited evidence that outdoor air pollution is a risk factor for TB (*119*). Outdoor air pollution has been associated with increased risk for respiratory infections in general, but the association with TB has been studied to a very limited extent (*120*).

Weakening of the host immune defence may be due to old age, HIV infection (*5*), malnutrition (*121, 122*), alcoholism (*123*), smoking (*124*), indoor air pollution (*118*), diabetes (*125, 126*), silicosis, malignancies, a wide range of chronic systemic illnesses and immunosuppressive treatment (*1, 127*). Mental disorders, including depression and severe mental stress, have been discussed as risk factors for tuberculosis. Depression and stress can have a negative effect on the cell-mediated immune system and could therefore in theory increase the risk of TB (*128*), but there is little published research on the putative association between depression or mental stress and risk of TB disease.

Several of the risk factors mentioned above also affect the risk of adverse treatment outcomes. HIV coinfection increases the risk of death, acquired drug resistance (*129*) and relapse (*130*). It is likely that smoking, diabetes, malnutrition and alcohol abuse increase the risk of treatment failure, death and relapse, though the research on this is limited and inconclusive (*121, 124–126, 131*).

The evidence base for the importance of the different risk factors is variable and there are few data on their population-level impact. Little is still known about the number of TB cases and TB deaths attributable to the different risk factors. Such information would help to narrow the focus of possible preventive interventions and may help to provide a better understanding of the reasons for the strong socioeconomic gradient of the burden of TB.

Population attributable fraction for selected risk factors

In a preliminary analysis covering the 22 countries with high TB burden, the population attributable fraction was estimated for selected TB risk factors that weaken the immune system (*3*). The analysis has recently been updated and the results are summarized in Table 12.1.

Violence and unintentional injury: equity and social determinants

13

Helen Roberts and David Meddings[1]

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1 The authors would like to acknowledge Danny Dorling, John Pritchard, Ian Roberts, Anneliese Spinks, Leif Svanstrom, Margaret Whitehead, and the Cochrane Injuries Review Group, The Cochrane Public Health Review Group and the Cochrane Equity Methods Group.

13.1 Summary

Injuries account for just under 10% of global mortality, constituting a major and growing public health problem, with worldwide injury-related deaths projected to increase by 28% by 2030. Over 5.7 million people lost their lives due to injury in 2004, and in addition to these, acts of war cause harm to millions more.

Injuries are a major contributor to inequities[2] in health. Intentional and unintentional injuries are unevenly distributed between rich and poor nations, and within nations between rich and poor individuals. Inequities relating to gender, age and ethnicity are also evident, and these vary according to injury cause and setting, with young men frequently overrepresented in some kinds of road traffic and intentional injury, and women and children more heavily represented in domestic injury, whether intentional or unintentional.

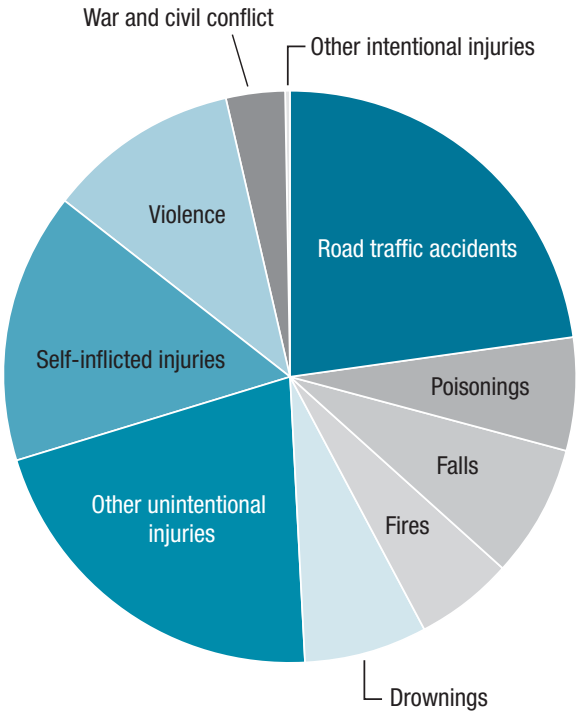
For interventions on injury to make a significant difference both to inequities and to the global toll of death and disability they need to act on upstream measures, addressing transport policies, including those relating to vehicle use and speed; housing policies, with the aim of turning the idea of the home as a safe haven into a reality; and alcohol policies, giving due regard to the supply end of the problem as well as problem drinkers. Putting the emphasis, as is often currently the case, on behavioural interventions directed towards individuals, and in wealthier nations, secondary and tertiary care of the injured, will further widen inequities.

At present, much of the evidence base for injury reduction comes from high-income settings. There is a pressing need to enhance the evidence base for both evidence of effect and evidence of effective implementation in low- and middle-income settings, and, in wealthier settings, to ensure that upstream interventions take account of the needs of the most disadvantaged populations. As in other areas discussed in this volume, the importance of lay expertise and knowledge is vital in addressing injury.

One implication of the approach described here, with an emphasis on upstream measures, is that injury prevention provides a powerful way of illustrating the health impacts of intervening on social determinants. Intervening in this way can and frequently does yield cross-cutting benefits for a range of health and other outcomes. The wide inequities in health in this area, although a depressing example of the need for an approach that encompasses social justice, also shows more positively that things do not need to be the way they are.

2 There are different views on the use of language. The authors of this chapter had originally inclined to the use of "inequalities" in health, but, in the interests of consistency, have adopted the terms used elsewhere in this volume.

FIGURE 13.1 Distribution of global injury mortality by cause



Source: World Health Organization (*1*).

13.2 Introduction

Background

Injuries account for just under 10% of global mortality, constituting a major and growing global public health problem. Over 5.7 million people lost their lives due to injury in 2004 – equivalent figures for HIV, tuberculosis and malaria were 2.0 million, 1.5 million and just under 0.9 million respectively (*1*). Seven of the 15 leading causes of death for people between the ages of 15 and 29 years are injury related (*1*). In addition to these deaths, injuries resulting from traffic collisions, drowning, poisoning, falls, burns, violent assault, self-inflicted violence or acts of war cause harm to millions more (*2*). Global injury-related deaths are projected to increase by approximately 28% by 2030 (*1*). Figure 13.1 breaks down the global injury burden by mechanism, showing the large parts played by road traffic injuries and violence (*3*).

In this chapter some of the ways in which inequities impact on causes and consequences of injury are outlined, and some effective or promising strategies to reduce injury and violence by acting on social determinants are set out. Finally, data requirements to monitor

Synergy for equity 14

Erik Blas and Anand Sivasankara Kurup

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This chapter will explore the common ground and potential synergies across different public health conditions and take these forward as the basis for proposing practical action. Evidence and proof of association and causality are presented for each individual public health condition (Chapters 2 to 13) and are not repeated here.

The chapter will start with an analysis of the different patterns of social gradients in the health of populations that have emerged from the analyses of the individual conditions. Next, the social determinants that most frequently occur in the pathways of the examined public health conditions will be identified. Then proposals on what public health programmes, individually and collectively, could do to change the situation will be discussed. This will be followed by consideration of implementation in the light of the lessons learned from the country case studies and proposals for programmatic monitoring. Finally, the implications of taking the recommended social determinant approach will be discussed.

14.1 Levels and patterns of social gradients

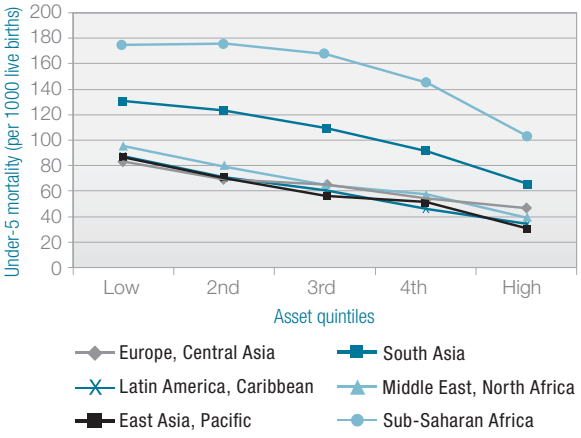
For all the health conditions analysed, available data show clear social gradients within populations. However, the steepness and the shape of the gradients vary not only with a condition, but also for the same condition across populations and time.

For example, variations exist in the marked social gradients in under-5 mortality that are found in all geographical regions (Figure 14.1). Two regions, sub-Saharan Africa and South Asia, have much higher under-5 mortality rates than other regions. With the exception of the highest quintile in South Asia, all quintiles of these two regions have higher under-5 mortality rates than the lowest quintile of any of the other regions. The other four regions have remarkably similar overall levels and gradients despite different levels of economic development. While mortality in those four regions is lower, the gradients across asset quintiles persist. This could indicate that under-5 mortality decreases with economic development only to a particular threshold level, and that inequity persists independently of the general level of economic development and is shaped by other factors.

More complex patterns appear at lower levels of aggregation, for example at national or subnational levels. The same condition can display different patterns of social gradients in different contexts and societies, depending on such factors as religious principles, values and cultural norms (Chapter 2). Further, the pattern can change over time, for example with economic development (Chapter 5). Axes of social stratification are strongly influenced by global, national and regional political and economic trends and by existing institutions and legal systems, and the relative explanatory power of differing socioeconomic markers varies between cultures (Chapter 7). Six main patterns of social gradients in health were identified in the analyses of the priority public health conditions. These are summarized below and examples of each pattern are given in Table 14.1, along with links to the relevant chapters.

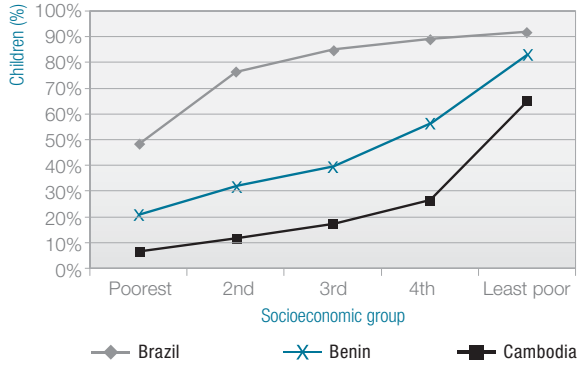
- Linear gradients occur for major social determinants such as wealth and education for all the conditions analysed. For example, Benin shows an almost linear gradient for percentage of under-5 children receiving six or more child survival interventions, by socioeconomic group (Figure 14.2).

FIGURE 14.1 Social gradients in under-5 mortality rate by asset quintile and region (low- and middle-income countries for which related DHS data are available)



Source: Data from Gwatkin et al. (*1*) (see Chapter 4).

FIGURE 14.2 Percentage of under-5 children receiving six or more child survival interventions, by socioeconomic group and country



Source: Extracted from Victora et al. (*4*) (see also Chapter 4).