4.4 Prevention strategies common to noncommunicable diseases

4 PREVENTION

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Summary

- Extensive research during the past few decades has provided strong evidence for prevention of cancer and other major noncommunicable diseases. Although preventive actions among people at high risk are important and there are multiple tumour-specific measures, the greatest potential for cancer prevention in the general population is through integrated health promotion and policies that target certain lifestyle-related risk factors to prevent noncommunicable diseases.

- The WHO Global Strategy for the Prevention and Control of Noncommunicable Diseases targets four behavioural risk factors – tobacco, unhealthy diet, physical inactivity, and harmful use of alcohol – with specific strategies.

- The WHO Framework Convention on Tobacco Control describes the most effective measures, especially for demand reduction, and is binding for the countries that have ratified it.

- The WHO Global Strategy on Diet, Physical Activity, and Health includes a range of evidence-based interventions to influence diet and physical activity in the general population. Emphasis is placed on measures to promote production, availability, and marketing of healthier food stuffs.

- The WHO Global Strategy to Reduce the Harmful Use of Alcohol describes initiatives to reduce the harmful use of alcohol, with emphasis on alcohol policy.

- The major challenge to framing preventive measures for noncommunicable diseases is the gap between the scientific knowledge of risk and its extrapolation to achieve reduced incidence.

As a consequence of the emerging NCD epidemic, the WHO Global Strategy for the Prevention and Control of Noncommunicable Diseases was approved by the World Health Assembly in 2000 [3]. It was based on the global increase of NCDs, the causal role of certain behaviour-linked risk factors, the accumulated scientific evidence indicating possibilities for NCD prevention, and the experience in several countries.

The potential of NCD prevention

The WHO Global Strategy for the Prevention and Control of Noncommunicable Diseases [3] acknowledged for the first time that NCDs are a priority area for WHO. The strategy focused on the four main groups of NCDs: cardiovascular disease, cancer, diabetes, and chronic pulmonary disease. It included comprehensive NCD control activities but emphasized prevention as the key public health approach.

Although the causal role of the main risk factors for NCDs was established beyond any reasonable doubt before 2000, the understanding of the great potential of NCD prevention has grown most rapidly since then. In Finland, large reductions in the age-specific rates of cardiovascular disease and cancer have
occurred as a result of the preventive work begun in the 1970s [4].

In the early years of NCD prevention, emphasis was placed on early detection, individual treatment, and education about causative agents. This is commonly known as the "high-risk" approach. However, both epidemiological and behavioural/social considerations emphasize "population-based" prevention as the most effective public health approach [5,6].

The WHO Global Strategy for the Prevention and Control of Noncommunicable Diseases introduced the concept of integrated prevention. It was recognized that although specific activities related to different diseases are needed, the most effective public health approach requires intervention to reduce the impact on the entire population of risk factors that are common to several major NCDs. The WHO strategy specifically addresses tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol.

This chapter discusses cancer prevention in the general population through this integrated NCD prevention perspective. This is the most cost-effective and sustainable public health approach to achieving a major reduction of the cancer burden in general populations. However, it should be recognized that several other measures, discussed elsewhere in this Report, can substantially contribute to cancer prevention. These include various screening programmes, measures to control certain infectious diseases, and action to prevent skin cancers by restricting exposure to ultraviolet radiation and to prevent lung cancer by addressing outdoor and indoor air pollution, specifically including clean stove programmes in relevant countries.

Population-based integrated NCD prevention targets risk-related behaviours or lifestyles in the community as a whole and requires emphasis on the built and social environments as determining lifestyle, and on broad health promotion and policy interventions. This has also led to consideration of the social determinants of particular lifestyles, and possibilities to influence them [7]. The early approaches to health education have, more recently, been supplemented by attempts to influence environments – physical and social. Such an "ecological" approach calls for comprehensive activities by different authorities, which may be equated to multisectoral actions, among which are policy measures by different sectors of the government, such as the Finnish initiative Health in All Policies [8].

Since the 2000 WHO strategy on NCDs, WHO has developed several major methodologies and tools for national interventions directed towards four behavioural risk factors: tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol.

**WHO Framework Convention on Tobacco Control**

The WHO Framework Convention on Tobacco Control (FCTC) was adopted in 2003 [9]. As of September 2013, 177 countries have ratified it. This is first time that international law has been used in the field of public health. The WHO FCTC specifies evidence-based elements of successful tobacco control; most initiatives are directed towards reducing demand for tobacco products. Demand may be reduced through education and communication (Fig. 4.4.1). Comprehensive educational, public awareness, and training programmes on tobacco control are directed towards health workers, other professionals, community groups, and decision-makers. Reducing tobacco use is difficult because of the strong addictive effects of nicotine and also because of the social dependence. Both pharmacological and non-pharmacological methods, the latter involving psychological and educational approaches, have been developed to effectively help tobacco users to quit. Tobacco control policies should include measures to provide cessation services [10].

The global tobacco epidemic is an immediate outcome of the powerful leverage of the multinational tobacco industry, exercised through advertising, promotion, sponsorship, and lobbying. Thus, an important component of tobacco control is a comprehensive ban on advertising, promotion, and sponsorship. In relation to this challenge, an international agreement is especially important because of the cross-border spread of advertising material.

Price and tax measures are effective and important means of reducing tobacco consumption, particularly among young people (see Chapter 4.1). Although there are no safe tobacco products, national or other relevant authorities can introduce regulations on testing and measuring tobacco products, and on levels of particular components in, and emissions from, these products.

Exposure to second-hand tobacco smoke, especially indoors, is recognized as causing multiple NCDs [11] and adversely affects vulnerable groups within the population, such as children. Smoke-free environments discourage people from initiating smoking and continuing to smoke. Thus, any tobacco control policy should include prohibition of smoking in indoor workplaces, on public transportation, in other indoor settings, and in public places such as stadiums.

Packaging for tobacco products should not promote the product by presenting misleading messages. Such misleading messages may include terms like "low tar", "light", "ultra-light", or "mild". Tobacco packages...
should carry large and clear health warnings in text or in the form of pictures, and/or be generic (Fig. 4.4.2). Australia was the first country to adopt the plain packaging of cigarettes [12].

The WHO FCTC specifies a range of measures to reduce supply. The sale of tobacco to minors should be prohibited, and this legislation should be comprehensively enforced. Vending machines should be placed so that children cannot obtain access. Surprisingly, a non-trivial percentage of the tobacco used worldwide is smuggled, manufactured illicitly, or counterfeited. Therefore, elimination of illicit trade in tobacco products is an issue requiring international collaboration by relevant authorities.

Although the scientific basis for tobacco control is very strong, further research is needed in several areas, including, for example, the vulnerability of particular populations. It is important for every country to identify its own research needs in the light of local circumstances. Monitoring trends in tobacco use in the general population and in subgroups is crucial. It is also important to monitor determinants and patterns of tobacco use, as well as the impact of activities related to tobacco control.

In 2009, the WHO FCTC Secretariat published a report on the global implementation of the convention [13]. The report concluded that the implementation varies substantially. Overall, most countries report high implementation rates for measures on packaging and labeling, sales to minors, and education and training. In general, implementation rates for programmes directed towards cessation remain low.

Promoting healthy diet and physical activity

Diet and physical activity are different from tobacco smoking in many fundamental respects [14]. Tobacco smoking is a very harmful practice and, in principle, not needed at all. Diet and physical activity are part of everyday life. Physical activity and eating a healthy diet are positive behaviours to be promoted [15]. Also, the health implications of diet are multiple and complicated. Furthermore, although there are general recommendations, the relationships of different nutrients and foods to different NCDs vary.

In 2004, WHO adopted a Global Strategy on Diet, Physical Activity, and Health [16]. This strategy provides countries with a comprehensive range of options to influence dietary practices and physical activity in their populations (Fig. 4.4.3). As background for this strategy, WHO, in collaboration with FAO, published the report Diet, Nutrition and Prevention of Chronic Diseases [17]. Based on expert advice, the report reviewed the evidence relating to nutrition as a means of preventing cardiovascular disease, cancer, diabetes, obesity, osteoporosis, and dental caries.

The WHO strategy's recommendations concerning diet for populations and individuals were the following:

- Achieve energy balance and a healthy weight.
- Limit energy intake from total fats, and shift fat consumption away from saturated fats to unsaturated fats; eliminate the intake of trans fatty acids (also called trans fats).
Fig. 4.4.3. Poster from the Strong4Life campaign to prevent childhood obesity in Atlanta, USA. Obesity increases the risk of diabetes, cardiovascular disease, and certain cancers—the major noncommunicable diseases—worldwide.

• Increase consumption of fruits and vegetables, legumes, whole grains, and nuts.
• Limit the intake of free sugars.
• Limit salt (sodium) consumption.

Individuals were encouraged to engage in optimal levels of physical activity throughout their lives. Different types and amounts of physical activity are required to achieve different health outcomes; at least 30 minutes of regular, moderate-intensity physical activity on most days reduces the risk of cardiovascular disease, diabetes (Fig. 4.4.4), colon cancer, and probably breast cancer.

The strategies—both policies and necessary actions to achieve them—must be adopted comprehensively, taking a long-term perspective and engaging all sectors of society. The complex interactions between personal choices, social norms, and economic and environmental factors must be recognized. A life-course perspective is essential, and the strategies should be part of broad public health programmes. Priority should be accorded to activities targeting the lowest-income population groups and communities.

**Governments**

Governments have a primary steering role and are encouraged to act within the context of comprehensive NCD prevention and health promotion. National strategies should identify the required measures and should include specific goals, objectives, and actions. Governments should take action in the following areas:
- Education, communication, and public awareness.
- Marketing, advertising, sponsorship, and promotion.
- Labelling of food products.
- Health claims.

School policies and programmes should support the adoption of healthy diets and physical activity of children, and health services should target the habits of patients and the general population. Governments should also invest in research and evaluation of nutrition and physical activity in the general population. National institutions for public health, nutrition, and physical activity have an important role to play in the implementation of programmes and in monitoring and evaluation.

**Private sector and civil society**

The private sector can also influence dietary practices and physical activity [16]. The food industry, retailers, catering organizations (including those responsible for meals at schools or workplaces), sporting-goods manufacturers, advertising and recreation businesses, and the media may all contribute to the adoption of good health practices. Moreover, commentaries note that food systems are rarely driven to deliver optimal human diets but predominantly to maximize profits, with increased obesity as the immediate outcome [18].

Recommendations to the food processing industry may include the following:

- Limit the levels of saturated fats, trans fats, sugars, and salt in products.
- Continue to develop and provide affordable, healthy, and nutritious choices to consumers.
- Introduce new products with better nutritional value than was previously available.
- Provide consumers with adequate and understandable product and nutritional information.
- Practise responsible marketing.
- Provide simple, clear, and consistent food labels and evidence-based health claims.
- Assist in the development and implementation of physical activity programmes.

Workplaces provide settings for health promotion and disease prevention, and should make provision for healthy food choices and encouragement of physical activity.

Civil society and nongovernmental organizations can advocate for healthy lifestyles and influence the food industry to provide healthy products. Such organizations can mobilize community sentiment and influence the public agenda. Nongovernmental and civic groups can support the dissemination of information on healthy diets and physical activity.

**Alcohol control**

Alcohol consumption is among the top 10 causes of mortality worldwide.
The global economics of chronic and noncommunicable diseases
Felicia Maria Knaut and Andrew Marx

Chronic and noncommunicable diseases (CNCDs) have massive ramifications for global poverty, financial security, and equity [1,2]. The World Economic Forum’s Global Risks 2010 report ranked chronic disease among the three most likely and severe risks facing the planet, with potential economic losses of more than US$ 1 trillion [1].

Between 2005 and 2015, income losses of US$ 558 billion in China and US$ 237 billion in India are predicted due to stroke, heart disease, and diabetes alone [3]. And the economic impact of CNCDs on low- and middle-income countries (LMICs) will become more severe over time, particularly affecting working-age populations. Although the predicted proportion of deaths from NCDs among those aged 15–59 years will fall globally by 2030, it will increase in LMICs [2].

Tobacco is a huge economic risk for LMICs. Tobacco’s estimated annual burden of US$ 500 billion exceeds the total yearly health expenditure of all LMICs combined. Tobacco consumption is estimated to reduce global economic gross domestic product by 3.6% per year. If consumption continues to rise, the global annual economic cost of tobacco may reach US$ 1 trillion between 2020 and 2030 [4].

The estimated annual cost of scaling up interventions to reduce risk factors such as tobacco use and harmful alcohol consumption is only US$ 2 billion for all LMICs—less than US$ 0.40 per person. After including additional interventions responsible for 2–3 million deaths per year [20]. NCDs are among the adverse health outcomes of alcohol consumption, which extend from the acute effects of intoxication, which contributes to accidents and anti-social behaviour, to chronic injury, including liver disease, certain cancers (Fig. 4.4,5), and cardiovascular disease.

A special aspect of alcohol consumption is its addictive nature. Thus, alcohol is “no ordinary commodity” [21]. While certain adverse health consequences of drinking, including road accidents and criminal assault, are usually a result of “harmful use”, the prevalence of harmful use is closely related to the level of alcohol consumption in the general population. Accordingly, interventions should not be confined to “high-risk interventions” among problem users, but should address general alcohol policy and

References
Every drink increases your risk.

alcoholthinkagain

be population-based interventions. There is consensus about effective interventions to reduce alcohol consumption [21]. Price and availability are the most effective matters for interventions. Among other interventions are measures to limit drinking and driving, and mini-interventions in health services. Information campaigns alone seem to have no direct impact.

In 2010, WHO adopted the Global Strategy to Reduce the Harmful Use of Alcohol [22]. This strategy includes evidence-based policies and measures concerning pricing, availability, and marketing. Pricing policies are important because consumers are sensitive to changes in the price of alcohol. Policy options include: taxation, especially taking account of the alcohol content of particular beverages; restricting the use of price reductions for promoting sales; establishing minimum prices; and price concessions for non-alcoholic beverages. Pricing policies should take account of inflation and variation in incomes over time. Strategies that regulate the availability of alcohol through regulation, policies and programmes include: appropriate systems to regulate production, wholesaling, and serving (regulations may include government monopolies, regulating hours or days of sale, or sales in certain places or during certain events); minimum age for youth being permitted to purchase these products; and policies to reduce illicit production or smuggling. Marketing policies should be aimed at reducing the impact of advertising and other marketing, particularly as these matters affect young people. Frameworks should be established to regulate the nature of, and amount of expenditure on, marketing and sponsorship.

Health services are central to mitigating harm at the individual level among those with conditions caused by alcohol. Health services should address prevention through initiatives to reduce consumption and through treatment interventions for individuals and their families. Mini-interventions, in the form of identification of persons at risk and brief interventions, have proven to be cost-effective.

Conclusion
A range of evidence-based interventions have been identified to reduce the deleterious effects of major lifestyle-related risk factors common to cancer and other NCDs. This approach was recognized in recent global political developments that culminated in the United Nations High-Level Meeting on the Prevention and Control of Noncommunicable Diseases that took place in 2011 in New York [23]. Influencing the behavioural risk factors common to several major NCDs in the general population is a cost-effective and sustainable public health approach immediately relevant to cancer prevention. Although effective treatment of cancer patients is a necessity, it is generally recognized that more should be done to prevent the otherwise increasing burden of malignant disease.
References


