OBESITY

STRATEGIC ACTION TO COMBAT THE OBESITY EPIDEMIC

Report of the Obesity Working Group 2013

Professor Shiriki Kumanyika,
Dr Kimberly Libman and Ms Ana Garcia

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CONTENTS

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FOREWORD

Obesity is a major contributor to non-communicable diseases (NCDs). The rising global pandemic of obesity and its related diseases pose a grave threat to national health systems and economies. While deaths from communicable diseases are dramatically decreasing globally, deaths from NCDs are projected to increase 77 percent between 1990 and 2020, growing from 28.1 million to 49.7 million deaths annually.

Rather than indicating prosperity and progress, increased body fatness and obesity now manifest as a dire consequence of urbanization, globalization, and the increased industrialization of the food supply. It affects those with rising incomes, but also the most poor and the most vulnerable. Many nations still struggling to address starvation, hunger, and undernutrition are now also seeing a rise in overweight and obesity among children and adults.

At the individual level, the problem seems deceptively simple – obesity is caused by too many calories in and not enough calories out. In reality, this difficulty of balancing energy intake with needs has become a population-level problem, involving complex forces well beyond the control of individuals, such as food marketing pressures, the transformation of the global food supply, mechanization of labor and transportation, and the concurrent shifts in cultural preferences and food and activity lifestyles. The *UN Political Declaration on NCDs* and the subsequent *WHO Global Action Plan for the Prevention and Control of NCDs* have set the course for taking action on obesity and other diet-related diseases. The World Health Assembly has agreed that nations should aim to achieve 0 percent growth in obesity globally by 2025, as part of a broader target to reduce premature mortality from NCDs by 25 percent by 2025.

This report recognizes the complexity of the obesity pandemic and relies on the "whole-population," prevention-oriented policy framework set out in the *Global Action Plan*. This framework emphasizes policies and environmental changes to improve the ability of individuals to achieve or maintain health-promoting dietary and physical activity patterns. Through literature reviews and key-informant interviews, we gathered evidence of successful and emerging innovations around the world that support these essential approaches and strategies.

An important challenge for health leaders is that the solutions to the pandemic lie well beyond the scope of the health system. Health Ministries are urged to develop partnerships with other sectors such as education, labor, transportation, agriculture, and finance and, within the health sector, to creatively re-deploy health system assets to address obesity and NCDs. Our hope is that this report provides both inspiration and evidence for taking on this challenge.

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EXECUTIVE SUMMARY

THE OBESITY PANDEMIC

Globally, nearly three million people die each year from the complications of obesity. Excess body weight is directly linked to increasing risk of type 2 diabetes, stroke, heart disease, and some forms of cancer. Over the last 30 years, obesity has become a global pandemic and a major contributor to rising rates of non-communicable diseases (NCDs) – a trend that threatens to reverse 50 years of improvements in life expectancy. Obesity among women also contributes to increased risk of life-threatening complications in pregnancy and childbirth. It adversely influences the future health of their children through gestational insults that lead to greater risk of obesity and type 2 diabetes later in life. Experts agree on the background cause of this rapid rise in obesity rates: namely, that people around the world are now living in environments that make unhealthy eating and physical inactivity easy and desirable. Obesity is not the product of some sudden mass failure of individual will power or dramatic genetic shift.

Economic Implications

As reflected in the 2011 *UN Political Declaration on NCDs*, national leaders worldwide recognize that, left unchecked, the coming wave of NCDs will place enormous strain on their national health systems and economies. Obesity negatively impacts economic growth and development. It reduces labor productivity and income, while increasing health expenditures. Effective interventions exist that, over time, can generate cost savings. Implementing these interventions requires commitment and innovation to tailor solutions to national contexts and deal with the complexity of structural and cultural factors that contribute to population-wide obesity.

"Obesity" and "overweight" are medical terms used to describe ranges of body weight that are considered unhealthy for a given height. These ranges are set on the basis of research linking degrees of body fatness to increased risk of health complications and disease. Obesity and overweight are measured using body mass index, or BMI. Adults with BMI between 25 and 29.9 are considered overweight; those with BMI of 30 or higher are considered obese.

Definitions of overweight and obesity in children use age- and gender-specific BMI cut-off points that take into account the changes in height and weight with growth and development.

KEY CHALLENGES

Individuals ultimately control what they eat and how active they are, but these behaviors are not always the result of conscious, individual decision-making. Our instincts drive us towards eating when food is available and drive us away from performing unnecessary labor. When palatable, high-calorie foods are abundant, convenient, attractively priced, and showcased by sophisticated marketing campaigns, it is not surprising that so many people consume foods that are inappropriate for their long-term health. At the same time, people are generally much less physically active than in the past. They are exposed to home, school and work environments that are increasingly mechanized. Leisure-time activities requiring minimal exertion, such as watching sports or television or engaging with the computer, are increasingly promoted and popular. This scenario, especially with increasing urbanization, is a prescription for excess weight gain and obesity.

Approaches are needed that broadly address the physical, economic, and social environment, and support population-level movement towards healthier behaviors. An essential part of the solution is to address sectors outside of the health system, including food and agriculture, transportation, the built environment (that is, buildings and other man-made features of physical living environments), labor, trade, education and mass communications. Governmental and non-governmental actors in these sectors decisively shape the environments that drive personal behaviors relating to eating and physical activity, which in turn influence disease levels and healthcare costs.

EFFECTIVE APPROACHES AND ESSENTIAL STRATEGIES

Policy Interventions and Inter-sectoral Partnerships

The *WHO Global Strategy on Diet, Physical Activity and Health*, adopted by the World Health Assembly in 2004, and the 2013 *Global Action Plan for the Prevention and Control of NCDs 2013-2020* set out evidence-based recommendations and specific targets for addressing the worldwide obesity and NCD crisis. The "whole-population" approach in these documents emphasizes policies and environmental changes that improve the ability of individuals to achieve or maintain health-promoting dietary and physical activity patterns and healthy weight levels. The emphasis on prevention through environmental and policy changes acknowledges we cannot solve the problem by relying solely on individual education and counseling or on treatment of those who are already obese. The whole-population approach challenges Health Ministers to attain high-level political support, work across government with relevant ministries, and also to establish multi-stakeholder partnerships for action on obesity, using "whole of government" and "health in all policies" approaches. Working like this will not necessarily require new funds; in some cases, it will leverage funds already allocated by showing how investments in many sectors can support obesity-reduction efforts. For example, policy actions on obesity can promote economic growth, foster ecologically sustainable infrastructure, provide incentives for agricultural production, and inspire health-promoting entrepreneurship, while at the same time reducing healthcare expenditures and developing the healthcare workforce.

Addressing Food System Drivers of Caloric Over-consumption

Policy action on the food supply – that is, the energy intake side of the equation – is an especially high priority. That is because of the dramatic upward shifts in caloric availability and affordability in recent decades, together with the fact that the potential imbalance in caloric intake vs output is not symmetrical. In other words, it is relatively easy to consume energy in excess of need but difficult or sometimes impossible to compensate by increasing physical activity enough to burn off the excess within a normal daily routine. Reducing obesity will require government, private-sector organizations, industry, and civil society to become accountable for protecting people from the environmental forces that promote chronic caloric over-consumption. As economic analyses indicate, the obesity pandemic is an example of markets failing to deliver healthy outcomes for society, thereby warranting government initiative and leadership in crafting solutions. Civil society groups can serve a watchdog role, enhancing the capacity for regulatory enforcement.

Improving Eating and Physical Activity Environments in Key Community Settings

As set forth in the WHO guidance and in foundational documents such as the 1986 *Ottawa Charter for Health Promotion* and the 1978 *Alma Ata Declaration*, population-based prevention strategies include community-based action, environmental change, political advocacy and policy change, as well as re-orientation of the health system towards primary care. No single intervention can influence all the factors in the food and physical activity environments that contribute to the development of obesity. Best practices for obesity prevention are being identified, thanks to empirical evidence on the short-term effectiveness of comprehensive interventions in settings where children and adults spend significant amounts of time. It has been difficult to link specific policy actions to long-term changes in population obesity levels or excess weight gain, partly because the problem is relatively recent and responses are evolving over a short time frame. Economic analyses estimate the cost-effectiveness of these interventions when taken to scale and when backed by appropriate and supportive governmental policy action; and recently there have been evaluations of actually implemented policy actions.

Multi-component school-based and worksite interventions have wide population reach. They can be cost-effective in a range of national contexts, if given time to achieve returns on investment, and they should be primary targets for change. In addition, effective primary care is a long-standing global priority and can be a focus for policy action on obesity, especially in combination with the school and worksite interventions. Ideally, the primary-care setting provides access for all members of society, and – given patients' trust in the expertise of care providers – presents a unique opportunity for interventions. Within the healthcare system, there are always workforce and economic constraints, so screening and individualized treatment approaches have to be reserved for those already at high risk or seriously affected by obesity. This strategy is also in keeping with the long-standing recognition that public health improvements are best met by other population-wide preventive measures together with a focus on those at high risk.

RECOMMENDATIONS FOR MINISTERS OF HEALTH

1. Champion obesity as an issue and become an ambassador for change in other sectors.
    - Assess the baseline and set locally appropriate targets for changes in diet and physical activity.
    - Establish multi-stakeholder partnerships for action on obesity, using inter-sectoral approaches.
2. Find innovative and economically viable ways to address obesity-promoting forces in the food environment, and learn from successes in similar countries.
    - Review and revise governmental and institutional food guidelines. Set nutrition standards for government-funded meal programs. Establish public-procurement guidelines that support local farmers and incentivize production of fresh fruits and vegetables.
    - Establish food-labeling standards, and use food-marketing regulations to protect children from advertising for unhealthy foods. Apply labeling standards to packaged foods, restaurant menus and point-of-purchase marketing.
    - Use fiscal and trade policy levers that support both healthy imports and healthy domestic food production.
3. Implement settings-based initiatives in at least one of three core societal institutions, and in other institutions in future years.
    - Healthcare.
    - Schools.
    - Worksites.

PRIORITY ACTION FOR HEALTH MINISTERS

The single most important thing that a Minister of Health can do to address obesity is to champion the cause of obesity-reduction. That will involve raising broader awareness about both the risks of inaction and the opportunities for action. By gaining high-level support and establishing multi-stakeholder partnerships for policy development, health ministries can mobilize resources, information, and powers that typically fall beyond their purview, and can create supportive political, economic, and social environments to combat obesity at a country-level.

THE OBESITY PANDEMIC

PREVALENCE AND HEALTH IMPLICATIONS

Globally, nearly three million people die each year from the complications of obesity. Excess body weight is directly linked to increasing risk of type 2 diabetes, stroke, heart disease, and some forms of cancer. Over the last 30 years, obesity has become a global epidemic and a major contributor to rising rates of non-communicable diseases (NCDs) - a trend that threatens to reverse 50 years of improvements in life expectancy.[1] Even in low- and middle-income countries (LMICs), obesity prevalence is rising at an alarming rate. Urbanization and globalization are transforming daily life for millions of people worldwide. Unfortunately, many of these changes promote unhealthy lifestyles, thereby directly contributing to the obesity pandemic. This virtually guarantees high or steadily increasing obesity rates for rich and poor countries alike.

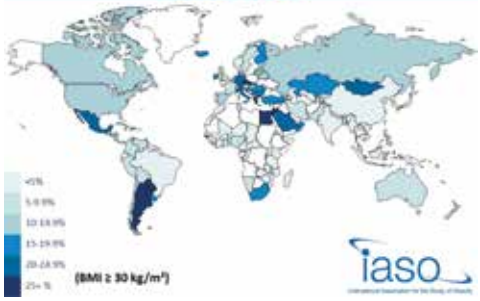
The pandemic of obesity and its complications puts NCD death rates on a trajectory to far exceed deaths from infectious diseases. This transition will have the greatest impact on developing regions, where 80 percent of the world population lives. Between 1990 and 2020, deaths from infectious diseases are set to decrease from 17.2 million to 10.3 million annually. During the same time period, NCD deaths are projected to increase 77 percent, soaring from 28.1 million to 49.7 million deaths annually.[2]

"Obesity" and "overweight" are medical terms used to describe ranges of body weight that are considered unhealthy for a given height. These ranges are set on the basis of research linking degrees of body fatness to increased risk of health complications and disease. Obesity and overweight are measured using body mass index, or BMI. Adults with BMI between 25 and 29.9 are considered overweight; those with BMI of 30 or higher are considered obese.

Definitions of overweight and obesity in children use age- and gender-specific BMI cut-off points that take into account the changes in height and weight with growth and development.

Historical maps of obesity rates worldwide show the dramatic increase in obesity over the last four decades, and make it clear that today, nearly all regions are experiencing this growing problem.†

Prevalence of Adult Obesity 1960's - 1990's



Prevalence of Adult Obesity 2000* to date

Prevalence of Childhood Overweight and Obesity 1960's - 1990's

Prevalence of Childhood Overweight and Obesity 2000* to date

† No data are available for the unshaded areas. Further details on methodology can be found at www.iaso.org/resources/obesity-data-portal/appendixearliestocurrentmap

* The child data for 2000 forward: in a few countries, the survey year may be earlier, because there is no post-2000 data for children specifically.

ECONOMIC IMPLICATIONS

High Costs of Treating NCDs

Most Ministers of Health now recognize that the coming wave of NCDs, if left unchecked, will place enormous strain on their national resources. Because obesity is a risk factor for other NCDs, obesity control is important for preventing and managing the challenges of diabetes, cardiovascular disease, maternal ill-health, and cancer. As the prevalence of obesity increases, so do its associated health problems, many of which are extremely costly to treat in the long term. Costs associated with NCD treatment have both direct and indirect economic consequences. Worldwide, an estimated US$863 billion was spent on cardiovascular disease in 2010, and the figure is projected to reach US$1,044 billion in 2030. About 55 percent of this spending is directly attributable to healthcare. Lost productivity, another means by which obesity impacts on national economies, accounts for the remaining 45 percent. In 2010, diabetes cost the global economy US$500 billion, and the figure might rise to US$745 billion in 2030.[3] Obesity prevention can stem the tide of increase in both obesity, and NCD costs.

Reducing expenditures on NCDs is already important for high-income countries (HICs), where the epidemic is most evident. For LMICs, which are just beginning to experience the burdens of obesity, it is crucial to avert the epidemic, otherwise their health systems will buckle from the costs. To control their healthcare spending, LMICs will need to control the obesity rate, especially as more countries move towards universal health coverage.

Initiatives to reduce the burden of obesity can give a country the opportunity to align its health and economic goals. It is now widely accepted that health and wealth are connected, and that favorable population health status will boost economic and social development.[4] For all societies, obesity adversely affects that economic growth and development. It reduces labor productivity and income, while increasing health care expenditures. It is true that increases in consumption can increase GDP in developing economies, but when it comes to food, there is a point at which the costs of over-consumption become detrimental to growth and long-term prosperity.[5]

Cost-effectiveness

In realigning primary healthcare to reduce obesity, an important first step is to define prevention and health promotion services so they can be accounted for in healthcare finance systems and included in overall considerations of cost-effectiveness. Calculations on the cost-effectiveness of obesity and NCD prevention and treatment can be controversial, in part because conclusions differ according to how effectiveness is defined and whether return on investment (ROI) is considered in the short-term or long-term (see the textbox 'Timeframes for ROI in Obesity Prevention and Treatment'). Interventions in child populations, such as school-based interventions and food-marketing restrictions, are effective in changing eating and physical activity behaviors, and may have immediate benefits for quality of life and functional status. But only when these healthier behaviors are carried forward into adulthood will the investments in early-life interventions pay off through the reduction of NCDs and associated healthcare costs or productivity losses. In adult populations, investments in both prevention and treatment can show faster returns.

For some idea of the potential savings, consider the alarming US estimate that for each unit increase in BMI above the cut-off point for obesity, an individual can expect an 8 percent increase in his or her annual healthcare expenses.[6] Even modest reductions in weight by an obese individual can lead to substantial savings. This is especially true in older adult populations, where complications from obesity require the most medical attention. In high-income regions like Europe, as much as 6 percent of healthcare budgets is perhaps being allocated to obesity.[7] Investments in policies that promote healthy eating, such as selective food and agricultural subsidies, could be offset by the savings associated with decreases in obesity-related healthcare costs.

TIMEFRAMES FOR ROI IN OBESITY PREVENTION AND TREATMENT[8]

Investing in obesity prevention should be a long-term effort, but some approaches that pay off in the shorter term are cost-effective. Policy changes at the national level are both the most effective and least expensive responses to implement. Using country-level data from a range of economic contexts, health economists find that fiscal measures such as subsidies on fruits and vegetables, and taxes on food with high sugar and fat contents, show the fastest returns. Policies such as regulating advertising to children and establishing standard food labeling generate cost savings within 20 years. Longer-term efforts are also needed, because it takes time to disrupt feedback loops that promote sedentary behavior and poor diet, or to create new feedback loops that promote healthy behaviors. In most contexts, individualized weight-loss counseling for those who already have obesity-related diagnoses can be cost-effective if it produces modest permanent weight loss. Treatment reduces health care costs in the near term that are associated with obesity complications later in life.

Current financial incentives driving innovation in obesity are treatment-oriented: these innovations include medical devices, surgery, and pharmaceuticals that can be billed to healthcare systems. In North America alone, the market for obesity management and weight loss products will rise to nearly US$140 billion in 2017.[9] These approaches, bariatric surgery in particular, might show effectiveness at reducing individual BMI, but will also drain the resources of healthcare systems. Bariatric surgery is an invasive, high-risk form of weight-loss treatment for children and adults who have extreme obesity that is resistant to other treatments; and is certainly one of the most effective interventions for producing long-term weight loss. It is becoming increasing available in LMICs, as a response to a growing market for medical tourism.[10] Given the high long-term medical costs associated with obesity and its related diseases, this approach may justify its cost in some circumstances,[11] but it cannot be viewed as an effective population-wide solution.

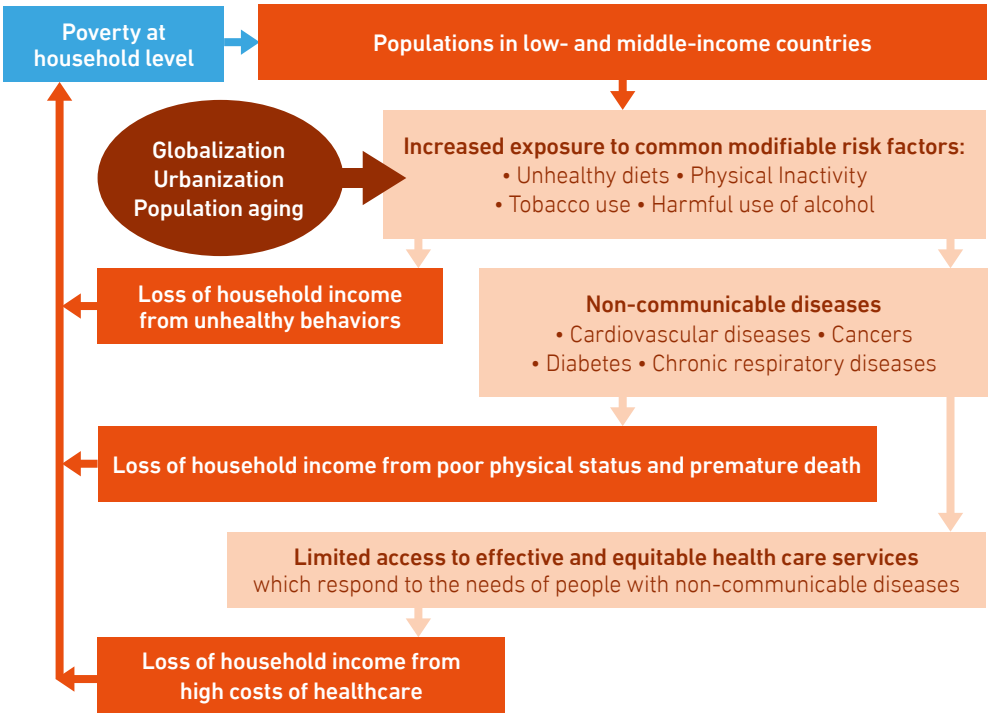
ECONOMIC AND SOCIAL INEQUITIES

Since obesity and NCDs both affect and are affected by economic forces, there are important implications for economic and social inequities.[12] Globalization and urbanization change everyday activities and increase obesity in low-income populations, in HICs as well as in LMICs, where under-nutrition has traditionally been of greater concern. Although hunger is linked to poverty and being underweight, obesity is also linked to poverty. This might seem counter-intuitive, but it can be explained. Urban life is increasingly characterized by high-calorie foods and beverages and mechanized work and transportation. Under these circumstances, income gains at household and national levels now permit behavior patterns – of food consumption, child feeding and physical inactivity – that result in excess weight gain and obesity and often actually assign social status and cultural value to these patterns. Initially, it is the upwardly mobile that become more overweight and then obese as their incomes rise. But nowadays, with urbanization and the new food economy – in which even relatively poor people can afford the heavily advertised high-calorie foods and beverages – obesity shifts into a disease closely linked to poverty, and takes on the seemingly intractable character that is typical of many health inequalities.[13]

Figure 1 illustrates the relationships between obesity and poverty in LMICs. In the context of globalization, urbanization and fewer deaths from infectious diseases, there are adverse changes in diet composition, over-consumption of calories, and decreases in physical activity. So obesity and NCDs develop, and these in turn lead to loss of household income owing to poor physical health status, healthcare costs and premature death. The loss of productivity and increased healthcare costs detract from the potential for economic gains at the country-level. There is a "double burden" – the co-existence of hunger with obesity and NCDs as public health challenges – that seriously constrains economic development and complicates consensus on food and nutrition policy.

Figure 1: Poverty contributes to NCDs and NCDs contribute to poverty

Reproduced, with the permission of the publisher, from *Global Status Report on Noncommunicable Diseases 2010, Geneva,* World Heath Organization, 2011



Regarding global disparities in obesity, one group that warrants particular concern is that of women and girls in LMICs and in lower socio-economic groups in HICs. These women suffer a disproportionate burden of obesity. In most places, obesity in women decreases as education (or income) increases.[12] In many societies, women are a disadvantaged group, having limited access to education, little political voice, and little economic independence. So women and girls also have less access to nutritionally sufficient healthy diets and opportunities for exercise. Obesity among women and girls is self-perpetuating: obesity among mothers or pregnant women increases the chances that their children will also be obese and experience related complications. Obesity among women and girls also has a negative impact on maternal mortality, as it increases complications in pregnancy and birth.[14]

Recent obesity trends in the US illustrate the special need for interventions to address obesity in socially disadvantaged populations in HICs. Several cities have seen significant reductions in child obesity rates over the last five years, but on closer examination of data, it turns out that those reductions are largely due to reduced obesity among children from more privileged backgrounds. In those cities, child obesity rates have remained steady for the less privileged communities, so the gap between the two sets has widened.[15] People in socially and economically disadvantaged groups have fewer and less desirable options for healthy eating and physical activity. In addition, people with limited resources are relatively more dependent on conditions in their immediate surroundings. For policy interventions to succeed at realigning the energy balance in poor communities, one priority is to improve their living conditions.

REPORT METHODOLOGY

The research for this report involved multiple methods to identify innovative perspectives on the problem of obesity and its solutions. For guidance on essential strategies potentially applicable to diverse country contexts, we consulted systematic reviews of evidence for the effectiveness of obesity interventions with children and adults in different settings. Our particular interest was in identifying evidence-based approaches to preventing and controlling obesity on a large scale: so we sifted meta-reviews and other syntheses on obesity interventions published in scientific journals or on websites of evidence-review centers such as the Cochrane Collaboration, the UK National Institute for Clinical Excellence, and the US Centers for Disease Control and Prevention. This initial research focused on the most recent syntheses of literature, from 2010 onward; on studies that used BMI measures as the outcomes of interest; and on studies of actions that could be influenced by national-level policy.

Additionally, our research drew on the expertise and experience of people from multiple academic disciplines, professional sectors, regions and nations, by means of interviews with member of the WISH Obesity Forum and other key informants. The interviews were also used to identify current challenges in responding to obesity. Both interviews and the literature review identified relevant case examples, and we then examined these further for their demonstrated impact on obesity, for their cost, and for their scalability. Case examples complement the report narrative by describing interventions in particular cultural and political contexts and may help leaders to identify applications relevant to their own settings.

KEY CHALLENGES

SOCIAL AND ENVIRONMENTAL CAUSES ARISING LARGELY OUTSIDE OF HEALTH SYSTEMS

Experts agree on the main point: that the surge of obesity across populations is not due to a sudden mass failure of individual will-power or a dramatic genetic shift, but rather a reflection of changes in living environments. Genes do play a role, but (except in rare cases) they are not the central determinant of who becomes obese. Genes that predispose people to obesity have always been present, and may explain why some people are more susceptible to weight gain, but the epidemic of obesity emerging within a few decades and in countries worldwide can only be explained by changes in the environment.[16]

Combating population-wide obesity requires interventions in both the food supply and the infrastructure that supports physical activity. The *Tackling Obesities* project, sponsored by the UK Government Office of Science, generated a systems map showing key physiological, behavioral, and societal pathways involved in obesity development: the "Foresight Systems Map". It demonstrates that the roots of the obesity pandemic lie in many sectors of society – mostly beyond the immediate purview of health ministers. Consequently, the mandate and authority to make decisions related to solving the problem must be spread across a range of actors.

Figure 2 shows a simplified version of the Foresight map. An "engine" at the core of this system reflects intrinsic regulatory and feedback systems related to food intake, physical activity, and energy balance, which are linked to individual physiology and psychology. The pathways on the map show how these individual variables relate to one another and to interrelated social and environmental factors – factors relating to food production, food consumption, and physical activity[17,18] that create the environments and condition the behaviors.

Figure 2: Reduced Foresight System Map[18]

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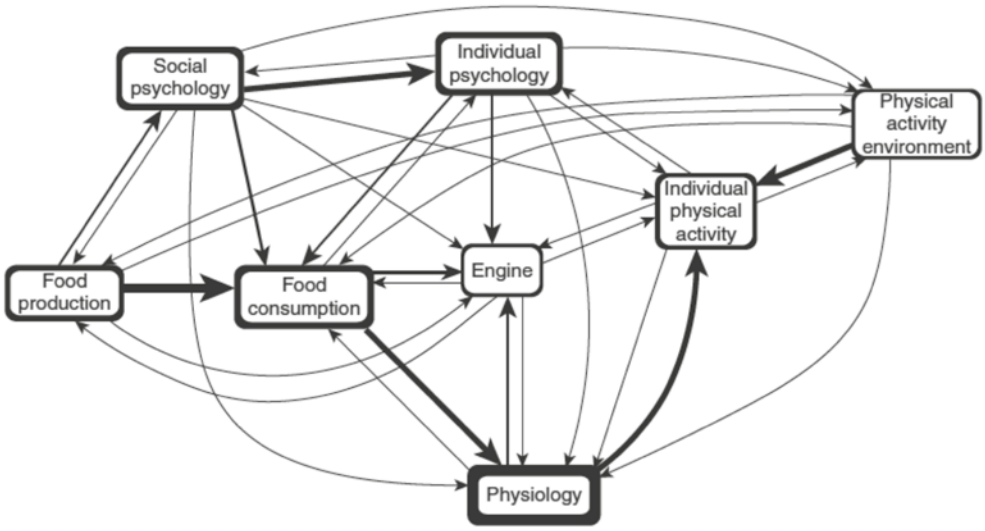

The number of individual connections between variables in each cluster is represented in the thickness of the connecting lines, while the number of connections within a cluster is shown as the cluster's border thickness.

FOOD SYSTEM DRIVERS OF IMBALANCED DIETS

Policy action on the food supply, that is, the energy intake side of the equation, is an especially high priority, because of the dramatic increase in caloric availability and affordability in recent decades, exacerbated by the fact that the potential imbalance in caloric intake vs output is not symmetrical. In other words, it is relatively easy to consume energy in excess of need, but difficult, or even impossible, to compensate by increasing physical activity sufficiently to burn off the excess within a normal daily routine. Eating behavior is not always driven by the rational mind. Responses to food availability and marketing are shaped not only by cognitive factors, but also by psychobiological, social, economic, and emotional considerations. Owing to the convenience and the over-abundance of enticing low-cost foods engineered to deliver pleasure, people engage in meal-to-meal and day-to-day decision-making that centers on efficient, and rewarding eating in the present, and tends to disregard the long-term health impacts of poor diet.

The global agri-food industry has changed rapidly in recent decades, as a result of globalization, urbanization, technological and scientific advances, and consumer demand for convenience and taste at low cost. Food marketing has proven alarmingly effective at driving consumer behavior – affecting children before they can speak, initiating cultural transitions in taste across national borders, and setting trends and benchmarks of social status. Although food systems contain some of the most obvious drivers of the obesity epidemic, their complexity and the entrenched power of corporate interests (often now referred to as "Big Food") have left many policy-makers frustrated by their limited options for action.[19] The tactic adopted by many advocates, of "blaming and shaming" the food industry for its contribution to the problem of obesity, overlooks the reality: namely, that without a re-alignment of current financial incentives, and in the absence of forceful governmental regulation, corporate actors are ensnared in the same web of market forces as consumers are. The apparently relentless drive for increased profits and market share is a logical response to the current incentives and the absence of regulatory controls.

The policy action most widely proposed is the introduction of restrictions on food marketing to children, even though it is really the entire population that is targeted by the intense marketing of foods high in energy (from their fat and sugar content) and low in vegetable and whole-grain cereal content. The implementation of coherent policies, however, faces significant challenges, since such restrictions can often threaten both government and corporate interests.

REGULATIONS ON ADVERTISING DIRECTED AT CHILDREN

The experience of Quebec demonstrates the potential effectiveness of regulations that protect children from food marketing. The largely French-speaking Canadian province of Quebec banned all commercial advertising to children in 1980. Economic modeling using consumer data from 1984-1992 indicates that this move led to a 13 percent reduction in fast-food consumption among French-speaking households in Quebec (anglophone households have greater access to English-language media from outside the province and are therefore more exposed to food marketing). This reduction is the equivalent of eliminating between 11 and 22 million fast-food meals a year. An important lesson from Quebec's experience is that this kind of policy is only effective at a national level, where the changes cover the majority, if not all, media targeted at children. Policies introduced to reduce food advertising to children in South Korea and the UK also appear to be having some impact on their exposure.

Source: Dhar T, Baylis K. Fast-food consumption and the ban on advertising targeting children: the Quebec experience. J Mark Res. 2011;48(5):799–813.

ENVIRONMENTAL INFLUENCES LIMITING ACTIVE LIVING

Physical inactivity contributes directly to obesity and to NCDs. There is now a body of evidence that shows how population activity levels can be improved by introducing changes to the built environment; that is, the buildings and other man-made features of the physical living environment that govern options for physical activity. The most practical way to promote population-wide moderate increases in activity appears to be investment in active transport systems. These initiatives involve land-use planning, infrastructure development policies, and social marketing campaigns to promote walking, cycling and use of public transport. Town planning and urban design regulations can also be employed in the effort to create safe and accessible places for play, sports, and active leisure.[20] New York City's Active Design Guidelines, for example, have been used at the municipal-level to promote the creation of healthier buildings, streets, and urban spaces. LMICs in which major transport infrastructure systems are currently being developed have the opportunity to incorporate strategic design innovations that promote health and ecological sustainability through active transport and reduced dependency on motor vehicles.[21] Active lifestyles, leisure, and sports activities can also be promoted by primary-care providers, as well as by schools and employers.

EFFECTIVE APPROACHES AND ESSENTIAL STRATEGIES

An essential precondition to effective and evidence-based action is an assessment at country-level of the prevalence of obesity, of its risk factors (such as trends in healthy eating and physical activity), and of the related infrastructure and systems (such as school-based health education and public transport). A report based on the information gathered can serve as a rallying call. If paired with appropriate targets, it can shape the country-level and local priorities for the approaches and strategies set out below.

EFFECTIVE APPROACHES

Policy Interventions

The first global attempt to lay down evidence-based recommendations for addressing the worldwide obesity and NCD crisis through diet and physical activity can be found in the *WHO Global Strategy on Diet, Physical Activity and Health*, adopted at the World Health Assembly in 2004. The population-based approach taken in the Strategy was followed almost a decade later with a specific list of recommended policy options in the *Global Action Plan for the Prevention and Control of NCDs 2013-2020*. A global target for the control of obesity was also adopted in May 2013, as part of a *Global Monitoring Framework for NCDs*. The member states of the WHO agreed to aim for a 0 percent growth in obesity globally by 2025, as part of a broader target to reduce premature mortality from NCDs by 25 percent by 2025.

The Global Strategy and the Action Plan, along with the *UN Political Declaration on the Prevention and Control of NCDs*, recognize obesity as a by-product of societal and environmental changes, and establish the need for whole-population approaches to solving the problem. A whole-population strategy centers on policies and environmental modifications that improve the ability of individuals to achieve or maintain dietary and physical activity patterns that promote health and help them to maintain healthy weight levels. The recommendations in this report build on this established WHO guidance.

The actions recommended in the Global Strategy cover personal changes in eating habits and physical activity, as well as changes in the physical, economic, and social environments that promote healthy behavior patterns and the maintenance of an appropriate energy balance. The recommendations are aimed at individuals and governments alike. Individuals are encouraged to consume certain recommended amounts of fruits, vegetables, legumes, whole grains, and nuts, to limit their intake of sugar and fats, and to undertake recommended levels of physical activity as appropriate for their age and health status. Governments are encouraged to develop national strategies for addressing diet, physical activity, and other NCD risk factors. Specific policy recommendations include: improving the facilities and increasing the opportunities for healthy eating and physical activity in places of work, the home, schools, and community settings. Health ministries are encouraged to set targets, and to co-ordinate and facilitate relevant actions from other ministries and government agencies. These actions may relate to the creation of legislation, development of appropriate infrastructure, implementation of programs, and provision of adequate funding, monitoring and evaluation, and continuing research.

Inter-sectoral Partnerships

The health sector has the task of leading partnerships with other sectors, in a joint effort to engage the multiple drivers of local conditions that affect individual lifestyles. These other sectors may include: food, agriculture, transportation, built environment, labor, trade, education, sports, and mass communications. The partnerships may perform activities such as setting national goals and assessing and implementing standards. For example, the Sultanate of Oman, faced by the long-term economic threat posed by rapidly rising diabetes rates, developed a "health-in-all policies" plan under the title *Health Vision 2050*, involving all areas of government in the prevention and control of NCDs (see the box on page 18). South Africa's *2013-2017 Strategic Plan for the Prevention and Control of Non-Communicable Diseases* specifically sets out to bring together leaders from trade, commerce and agriculture to shape tax policies that reduce the cost of nutrient- and fiber-rich foods, while increasing that of obesogenic foods.

"ACTIVE QATAR" CAMPAIGN

Qatar's First National Sports Sector Strategy (2011-2016) sets out plans for an "Active Qatar" campaign aimed at educating the public on the importance of healthy and active living. Activity levels are low across the entire population in Qatar, so the campaign will promote active lifestyles for all. It will also include specially targeted efforts for priority groups that are particularly vulnerable to inactivity-related diseases, such as people with disabilities, women, the elderly, and people with clinical conditions such as obesity and diabetes.

Forging inter-sectoral partnerships requires political skill, but it is made easier if the possible co-benefits of obesity intervention are clearly explained. For example, for sustainable positive development, the World Bank recommends incorporating measures to combat obesity at all levels, including trade policy.[27] Indeed, because the main drivers of obesity are linked to core social and economic factors, efforts to address obesity can yield benefits over a wide range of sectors – from environmental protection, to improving balance of trade, to long-term financial sustainability. Policy actions can also promote forms of entrepreneurship, for instance in sports and exercise equipment and the retail of healthy foods, while reducing healthcare expenditure.

Inter-sectoral partnerships can be particularly valuable for ensuring that existing programs use resources wisely to achieve the desired dietary and physical-activity goals. The benefits here are especially great when addressing the inequities that lead to high risk of obesity among socially disadvantaged groups. Government policies in HICs, for example, can have a direct impact on the poor and some immigrant or ethnic minority groups in areas such as food consumption, housing, work, and schools. Developing food procurement guidelines in line with nutritional guidelines can be very helpful in creating successful feeding programs and in catering for schools, hospitals, and workplaces. Similarly, by applying active-design guidelines in public-housing developments, worksites, and major infrastructure projects, policy-makers can shape activity patterns for generations to come.

CASE STUDY: OMAN'S HEALTH VISION 2050[22–26]

Inter-sectoral collaboration to meet the challenge of NCDs

The Sultanate of Oman, a Gulf Arab State with a population of 2.8 million, has made remarkable advances in public health over the last 40 years and now tops the rankings for child-mortality reduction, vaccination coverage, increased life expectancy, control of infectious diseases, and health-system performance. Underpinning these achievements has been a series of five-year plans for health development in Oman, starting in 1976 and concentrating on primary care, disease prevention, and community participation. As the country experiences a rising burden of chronic disease (treatment of cardiovascular disease alone absorbs 21 percent of national health care expenditures, and total health care expenditures increased by 64 percent from 1995 to 2005), planning efforts are redoubling on this strategy, and expanding to a pointedly intersectoral, multiagency effort.

The next stage of planning will aim not just to develop a set of policies for the Health Ministry, but to establish a national policy for health improvement. To quote Dr Ali Talib Al Hinai, undersecretary for planning affairs at the Ministry of Health: "This means that every single person or ministry (including agriculture, environment, education) that is going to have some kind of impact on health will be a part of the health system." This new expanded collaboration was introduced at the Oman Health Vision 2050 conference in 2012. In line with the need for ministers of health to act as intermediaries with other sectors, Minister Al Hinai paid advance visits to all the other national ministries and established an inter-sectoral committee that will assist in developing and implementing the ideas generated at the conference.

Oman's new inter-sectoral efforts will be bolstered by the significant steps to counter NCDs already taken within the Health Ministry, including the adoption of dietary recommendations, the creation of a national NCD screening program for Omanis aged 40 and over, and the establishment of well-clinics. Oman is a signatory of the 2012 Dubai Declaration on Diabetes and Chronic NCDs in the MENA region, and has adopted the *WHO Global Strategy on Diet, Physical Activity and Health* and adapted it to its own local conditions.

The Health Ministry is optimistic about its ability to minimize its requirements for expensive tertiary and quaternary care. Through its Health Vision 2050, Oman aims to realize the ambition, articulated by Dr Lou Francescutti, that the country should "get rid of its patients" and ensure that all Omani residents remain healthy.

The WHO 2010 *Adelaide Statement on Health in All Policies* advises that formulating policies to promote public health requires collaboration between all sectors and levels of government, as well as with key stakeholders outside of government, such as community action groups and the private sector. Although such collaboration extends the network of actors and resources working to reduce obesity, public-private partnerships can be controversial when they include industries that are directly involved in food production, manufacturing, or retailing. To be successful, collaborative programs require clear and transparent guidelines that ensure a proper balance between the interests of public and private-sector contributors. There are obvious inherent dangers in permitting industries with vested interests too great an input in policy-making. For example, in New Zealand, efforts to improve the labeling of foodstuffs, impose restrictions on marketing and advertising, and set standards for food served in schools have been compromised by allowing industry access to the policy processes.[28]

Inter-sectoral partnerships can also work at the local-level, notably in the form of "whole community interventions," in which a broad network of participants work together to reduce obesity in a specific locale. The Epode European Network evolved from a 12-year study in France that compared obesity rates in two towns – one that implemented a whole-community approach to obesity control and one that took no co-ordinated action. The whole-community approach included school-based interventions, parent and community engagement, municipal support for environmental changes such as new sports facilities, and media coverage of these efforts. This co-ordinated intervention led to a significant fall in childhood obesity rates, and significantly lower rates than in the control town.[29] EPODE is now active in 275 European towns and cities. On a somewhat more modest level, a similar community-wide campaign in Somerville, Massachusetts, US, under the title 'Shape Up Somerville', saw a reduction in child BMIs as compared to those in two similar areas not operating such a program.[30]

One way to promote local level collaboration and innovation is by funding competitions. For example, the US Centers for Disease Control and Prevention Community Transformation Grants program provides a competitive funding mechanism for localities interested in developing tailored initiatives that apply evidence-based principles of disease prevention at a local level. In England, the Healthy Towns competition used a similar mechanism to encourage collaboration between town planners, health officials, and community-based groups. In Australia, the national government allocated AU$1 billon over eight years to improve national economic performance through local health promotion. The program created specified targets for states or territories to receive further payments and moved prevention efforts out of the health system as much of the funding went to reinforce local governments.

ESSENTIAL STRATEGIES

Owing to a complex web of social and environmental factors, increasing numbers of people are consuming excess calories and living increasingly sedentary lifestyles. There is general consensus on the need to generate innovative community-design responses to the challenge of building physical activity back into the daily lives of people living in urbanized areas. Simultaneously, policy-makers and researchers are developing innovative and cost-effective tools for re-aligning food systems to support health promotion, ecological sustainability, and economic development – as opposed to over-production and over-consumption. Both strategies – increasing physical activity and decreasing caloric intake – are essential responses to obesity that can be implemented through both national policy and community-based action. As described previously, it is crucial to address the drivers within the food system that encourage imbalanced eating habits, in order to reduce obesity rates. Food is essential for human survival and for economies, and this means that efforts to change food systems are by their nature unparalleled in their social, economic, and political complexity.

Addressing the Food System Drivers of Over-consumption

Reversing the global obesity epidemic means that government, private sector organizations, industry, and civil society have to become accountable for protecting consumers from the environmental forces that encourage people to overeat. Any response to obesity requires the input of cultural institutions, families, the media and social institutions like schools. But ultimately, it is the government's responsibility to protect consumers and ensure that markets work efficiently to deliver the choices that promote rather than jeopardize healthy living. Economic analysis indicates that the obesity epidemic represents an instance of markets failing to deliver healthy outcomes for society, so governments have to provide initiative and leadership in crafting solutions. Community action groups can play a watchdog role, reinforcing the effectiveness of regulatory measures.

Several countries and regions have succeeded in implementing policies aimed at altering food environments and promoting healthy diets. This has at times required collaboration between the health, trade, and agricultural sectors – a grouping that may provide an ideal opportunity for using high-level authority to create systems change. The Home Grown School Feeding Program (see box on pages 21 and 22) serves as an innovative example of cross-sectoral collaboration of this kind, including education, agriculture, and the community, and using public procurement and agricultural policy to promote health.

CASE STUDY: HOME GROWN SCHOOL FEEDING PROGRAM, BRAZIL[31,32]

An inter-sectoral venture to produce healthy students and a healthy local economy

School meals programs exist in almost all high- and middle-income countries, as well as in some 70 of 108 LMICs. Many governments, including Angola, Ghana, and Nigeria, have a specific policy that every child attending public schools should benefit from school feeding. The UN World Food Programme's Home Grown School Feeding Program (HGSF) advocates the use of domestically produced and purchased foods in schools, and particularly reliance on local small-scale farmers. In partnership with the education and agriculture sectors, HGSF aims both to improve children's well-being and to promote local agricultural production and development, by providing a stable and long-term market for small landholders. This use of locally produced foods can also be harnessed to support obesity prevention, by emphasizing the value of whole, fresh, and unprocessed ingredients.

The scale of HGSF builds up over time. First, the program organizers establish strategic procurement goals and begin to test purchasing arrangements with small scale-farmers, but they purchase only a small proportion of their food from these farmers, thereby protecting the existing food pipeline. During the second stage, the proportion purchased from small-scale farmers is gradually increased, and the amount of investment rises to maximum level, mainly to support agricultural development and market-access initiatives. In the third stage, a greater proportion of food is purchased from small-scale farmers. At this point, small-scale farmers will have developed sufficient capacity to deliver food to schools on time without sacrificing quality or quantity.

Since 1988, all children in Brazil have had a constitutional right to receive one free meal a day at school. This right was introduced with the aim of reducing child malnourishment and improving school enrolment rates. However, during the early stages of the initiative, the food quality provided by schools was often poor, consisting of dehydrated and processed foods. In 2009, to rectify this situation, the government introduced regulations on the governance structure and procurement strategies for school food programs. These regulations require that 30 percent of the national school food budget be spent on food sourced directly from family farmers in the local region served by the school.

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Case Study Continued

In the Municipality of Campinas in the State of São Paulo, for example, the program offers fresh vegetables and fruits as part of school meals four days a week and as a snack on the fifth day. Before the HGSF program and the implementation of the national policy, the menu was "industrial," including items such as sweet rice, porridge or pasta, and soy juice. This menu was unpopular with many children, but after the new arrangement was introduced, approval ratings among the students rose to nearly 80 percent. The meals consist of meat and salad, or chicken stew, and fresh juice, delivered directly by wholesalers on the basis of one-year contracts with the municipal government. The program has now been developed further to include training for school cooking staff, and arranging for menus to be tested and approved locally.

Key Success Factors

The institutional arrangements needed to implement HGSF programs vary from country to country, and have to take account of various factors, including the type of government and existing legislation. But in all cases, certain institutional features need to be in place for a program to succeed. These include:

- A joint ministerial taskforce in charge of implementing the institutional, and policy-development requirements, and responsible for providing guidelines and directives for the preparation of the overall program.
- A program committee, composed of government and non-government representatives, responsible for coordinating the various components, and activities of the HGSF program and monitoring and evaluating progress.
- An implementation unit, responsible for the day-to-day running of the program, including procurement, disbursement, and logistics.
- Technical advisors to assist in program design and implementation, and to provide technical assistance in specific areas of the program or with specific innovations in the way the program is shaped and implemented.
- Local implementing agencies that manage specific activities (such as procurement, distribution, catering and food processing) when local government lacks the capacity to oversee and implement service delivery.

Settings-Based Eating and Physical Activity Initiatives

Successfully tackling obesity involves three crucial efforts: shifting societal norms, public education, and creating an infrastructure that supports health-promoting lifestyles. Public-health improvements are best achieved through population-wide preventive measures coupled with specific measures targeted at those at highest risk. A key challenge for health leaders is to identify interventions that are appropriate for individual community settings, such as schools, workplaces, and health systems. These community settings, along with health workforce education, represent a key area for expanding health-system capacity.

Multi-component settings-based interventions have wide population reach, are supported by research studies in multiple contexts and provide a pragmatic foundation for action. School and worksite interventions have been shown to be cost-effective in a range of national contexts if given time to achieve returns on investment,[8] and these sites should be treated as priority target settings for change.

The bibliography at the end of this report lists several papers of potential value to leaders as they develop intervention initiatives in two broad areas: the healthcare system itself, and schools and workplaces.

Healthcare: For a framework for introducing measures aimed at population-scale obesity prevention into healthcare systems, various fundamental WHO documents are available, such as the *Alma Ata Declaration*, the *Ottawa Charter for Health Promotion,* and most recently, the *Global Strategy on Diet, Physical Activity and Health* (along with the associated guidance on the implementation of these strategies). The guidance given makes it clear that prevention of obesity must go beyond healthcare-based measures; success requires the integration of other factors, notably political advocacy and environmental changes in support of healthy lifestyles.

Optimally, access to all members of society can be achieved through primary care and primary care providers. Patients generally know their care providers, and trust their expertise, and this presents a unique opportunity for interventions such as behavioral and lifestyle counseling. Within most healthcare systems, however, cost and workforce constraints mean that screening and individualized treatment are reserved for those already at high risk or seriously affected by obesity. Recent research has highlighted the cost-effectiveness of customized, multi-component treatment for obesity – that is, treatment that covers a combination of educational, environmental, and behavioral factors, taking in activities such as nutrition education, fitness training and physical exercise, training in behavioral techniques, and specific dietary guidance. Also, there are potential savings when patients are screened and referred by a doctor for physical exercise and nutritional counseling in a community-based setting outside the healthcare service. Another strategy for cost containment is reserving treatment for obese patients that also present symptoms of related health conditions like hypertension or diabetes. Still, clinical preventive services of this type typically require new resources or reallocation of resources in a context where there is not yet full appreciation of this issue.

No one doubts any longer that the availability of effective and scalable obesity treatment is of huge importance, given the increasing prevalence of obesity itself and the need to control and limit its associated NCDs in those already suffering from obesity. Treating diabetes, heart disease, and other co-morbid conditions associated with obesity is expensive in terms of pharmaceuticals, technology, and human resources. Treating obesity itself with weight-loss surgery is extremely expensive, and also high-risk if not performed under strict quality standards. As for the ad hoc development of a healthcare system increasingly focused on diabetes care, cardiac procedures, and bariatric surgery – it will prove to be an unsustainable drain on resources, as the obesity epidemic continues to unfold.

CASE STUDY: THE MIND, EXERCISE, NUTRITION, DO IT PROGRAM[33]

Pediatric referrals to a community-based family program

When UK families seek support in changing their child's eating habits and physical activity routines, they can get some extra help beyond the pediatricians' office. Pediatricians can refer patients to The Mind Exercise Nutrition Do it Program (MEND). MEND is an independent social enterprise operating in the UK, Australia, New Zealand, the US and Canada, and the Middle East. MEND works in collaboration with the health system to receive referrals (including self-referrals) and help patients meet their health goals.

In the UK, MEND conducted a randomized controlled trial of a family-based obesity intervention run by non-specialists in multiple community settings. The MEND team trained personnel to provide children and adolescents with nine weeks of lessons, over a period of six months, on active living, healthy eating, and behavioral change. The children who received the lessons also got a 12-week free pass to a local swimming pool.

Children who participated in the MEND Program recorded significant improvements in their waist measurements and BMI, as well as in measures of cardiovascular health and psychological well-being. Results – including benefits in cardiovascular fitness, physical activity levels, and self-esteem – were sustained even after 12 months.

There was high attendance among the families assigned to the program. Participating families said they needed the comfortable, informal support of MEND to help them act on the medical advice of their family physician (see the video at **www.youtube/APwktjoF44A**).

Key factors for success

- Families liked the program and felt comfortable, which resulted in a high completion rate for the children enrolled.
- The standardization of the MEND Program allowed the intervention to be delivered by community practitioners who had no previous expertise in the management of pediatric obesity.
- Having multiple, community-based sites made the program accessible to families throughout the area.

To support obesity-reduction, a core health-sector activity is that of reforming the education of health professionals: specifically, to increase the emphasis on primary care practice, including prevention and treatment of NCDs and on partnership with the community. Ideally, healthcare providers will link patients to community resources that provide education on healthy eating and exercise and will advocate for action on obesity by changing community conditions. Workforce development should also expand the ranks of healthcare providers by engaging Community Health Workers and community-based partners, such as NGOs. Health-worker professional development should address obesity as a clinical concern and also train care providers to be leaders and advocates in addressing the social determinants of health.[34]

CASE STUDY: KHAYELITSHA COMMUNITY HEALTH WORKERS[35–37]

CHWs spur transformation in the community, and for themselves

Khayelitsha is a township on the Cape Flats, outside of Cape Town, South Africa. Unable to meet the needs of their patients with NCDs or NCD risk factors, the area's health clinics introduced Community Health Workers (CHWs) to assist with the very high prevalence of hypertension in the area. The project launched by first focusing on the health needs of the CHWs, who were themselves at risk of NCDs. In fact, 97 percent were obese. Like their fellow community members, the CHWs had misconceptions about the causes and treatment of chronic diseases, and also lacked knowledge on nutrition and the risk of high fat intake. The easy availability of cheap unhealthy food also limited their ability to make healthy food choices.

A special training program was organized for the CHWs. As part of the experience, the CHWs designed interventions for primary prevention of NCDs in Khayelitsha. The CHWs' activities were very well received by the community. They included awareness-raising efforts like fun walks in the township, and staging a drama to disseminate messages about the causes and prevention of hypertension and diabetes. The interventions were relevant to and resonant with community members. As a result, community members requested regular weekly meetings, where they could get peer support and learn more about risk factors and preventive measures for hypertension and diabetes. That in turn led to the development of a health club, named "Masiphakame ngempilo yethu" meaning "let us stand up for our health."

On the first day of the club, only eight participants registered (all females), but the numbers increased weekly. By the end of three months, 76 participants had been recruited, and every week new members joined the health club. Participants included males and females aged 30-65 years. 82 percent of the participants had a BMI > 25, falling in the overweight to very obese categories. Two years after the intervention, the number of participants who were obese had declined. The club has generated support groups and buddy/mentoring networks, to help people sustain their new healthier habits.

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Case Study Continued

Among CHWs too, the program has achieved success: along with improving their knowledge of NCD treatment and prevention, it has led to a decrease in the number of obese CHWs and an increase in those who were of normal weight. And the buddy/mentoring system and support groups have led to increased physical-activity levels among CHWs, as with the general population.

Factors for success:

- CHWs helped to develop culturally relevant, enjoyable interventions for the community.
- CHWs had institutional support, including training and retraining, program management and supportive supervision from the clinics.

Schools and Childcare: Obesity treatment and prevention efforts in schools and crèches usually include a mix of education, behavior change, and feeding programs. Interventions that combine nutrition and physical activity and include school-based components have proved effective at preventing obesity.[38] Building obesity interventions into existing afterschool programs is also cost-effective in HICs.[39] A review of school-based interventions in LMICs concludes that multi-component programs can reduce body weight and improve dietary and physical activity behaviors.[40] A systematic meta-analysis of school-based obesity interventions found that programs including behavior modification, nutrition, and physical-activity components were effective in treating obesity among children aged 6-12.[41] In addition, a comprehensive approach to school-environment interventions should include a structured physical-activity component, as in the Gesunde Kinder in Gesunden Kommunen program.

CASE STUDY: GESUNDE KINDER IN GESUNDEN KOMMUNEN/HEALTHY CHILDREN IN SOUND COMMUNITIES[42–44]

The Healthy Children in Sound Communities (HCSC) initiative matches schools with community organizations and sports clubs to help students get 60-90 minutes of physical activity every day. The project involves 39 primary schools within 12 municipalities along the German-Dutch border, with extensions into the Czech Republic, Italy, Poland and the UK.

The effort began with local networks being created in each of the 12 municipalities. Called "Runder Tisch" in German and "Ronde tafel" in Dutch, the networks have a common funding source and central administrative support, but each is empowered with its own municipal-level moderator: he or she coordinates the implementation of the intervention programs in the local schools and across the municipal agencies responsible for education, health, social work and physical activities.

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Case Study Continued

Students receive 2-3 hours of physical education per week, and one hour of health and nutrition education. This curriculum is enhanced by participation from outside organizations and experts. Students also take part in a "walking bus," which is a group of children who walk to school with one or more adults (providing adult supervision can help reduce safety concerns for families who live within walking distance; see the video at **www.dailymotion.com/video/x9owgl_european-journal-germany-the-walkin_news**). Outside of school hours, students get an additional two hours of physical activity per week through special health classes given by local sports clubs.

Over an 11-month period, an evaluation of 557 children demonstrated a significant increase in endurance, co-ordination, velocity and force tasks (including sit-ups, push-ups, 20-meter run, standing broad jump, rapid alternation jumps, six-minute run) and a significant decrease in BMIs. In Germany, the number of individuals in the overweight/obese BMI percentiles decreased from 15 percent to 14.6 percent, and in the first year of a four-year intervention, 5 of 19 children with obesity dropped out of this percentile (decrease from 7.3 percent to 5.4 percent). In the Netherlands, the number of individuals in the overweight/obese BMI percentiles decreased from 12.8 percent to 12 percent.

Key factors for success

- Activities are integrated into the regular daily activities of student life.
- Partners are multi-sectoral and include public/private collaboration.
- HCSC has a high level of buy-in at the policy-level, including from ministries of health and education.

Worksites: Systematic reviews of research on worksite obesity interventions find that programs addressing both diet and physical activity succeeded in helping participants lose weight and maintain losses for six months.[45,46] Return-on-investment analysis shows that there are also financial incentives for employers to invest in worksite obesity interventions.[47]

National leaders can take steps to encourage employers to implement worksite health programs. For example, The Qatar National Nutrition and Physical Activity Action Plan (2011-2016) focuses on worksites as an intervention setting, along with schools, and the community. The Ministry of Labor and Occupation Health is a key partner in the policy. Objectives for the worksites initiative include developing guidelines for physical activity and also healthy eating at the workplace. High-level leadership within the worksites may also be important, as illustrated by the DOW example.

CASE STUDY: DOW CHEMICAL[48–52]

Worksite wellness helps an employer's bottom line

The Dow Chemical Company (DOW) in the US has offered its workers health services for nearly 100 years, and formal health promotion programs have been in place for over 25 years. Just recently, however, the company turned its attention to addressing chronic disease risk factors such as obesity. After all, obesity can be costly: obese employees take more sick leave than their non-obese counterparts and are twice as likely to experience high levels of absenteeism. Across the US, obesity-related disorders annually cost employers an estimated 39.3 million lost workdays, 239 million restricted activity days, and 62.7 million visits to the doctor.

To implement its program, DOW partnered with the US's National Heart Lung and Blood Institute (NHLBI), a component of the National Institutes of Health, to run a four-year intervention study at 12 DOW Chemical worksites across the US. They tested two levels of interventions in a manufacturing setting: 1) a moderate-level treatment that introduced an array of inexpensive environmental changes focused primarily on the physical environment; and 2) an intensive-level treatment that required a higher level of commitment, especially among site leaders.

Many supports were offered to employees; all were grounded in scientific evidence. The interventions included: a weight-management support call center, access to an online Weight Watchers program, nutritional counseling, healthy onsite vending machines and cafeteria foods, physical activity opportunities such as a "walking paths" initiative, targeted health messaging, employee rewards and recognition, and sponsored coverage of related health services. "Intense" settings also included organizational goal-setting and leadership training and rewards/recognition approaches.

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Case Study Continued

After year 1, employees had significantly improved weights and BMI values and there were improvements in blood pressure. After year 2, employees maintained their baseline weight (whereas control site employees gained weight of an average of 1.3 pounds (0.6 kg) and 0.2 BMI points). In addition, researchers found that altering the basic work environment to facilitate healthy behaviors heightened employees' awareness of their own health and improved employees' perceptions of their employer.

Key factors for success

- DOW Chemical, with additional funding provided by NHLBI, had the infrastructure necessary to implement an intensive, multi-pronged worksite intervention to address obesity prevention.
- The intervention was based on proven obesity-management methods.

RECOMMENDATIONS FOR MINISTERS OF HEALTH

The problem of obesity manifests itself differently according to regional, national, and local factors such as demographics, cultural attitudes, political economy, built environments, food environments, and health systems. Therefore, there can be no one solution to the obesity problem that covers every situation. However, there are common themes that emerge from the global experience to date that offer clear direction for developing an obesity agenda tailored to the needs of individual countries.

The process we outline for developing an action agenda will help to achieve a staged and incrementally effective approach, by identifying concrete practicable steps that can exploit both national policies and local institutions as drivers for change. Institutional settings such as schools, workplaces, and health care sites, when taken together, can provide comprehensive coverage of local environments where behaviors are shaped and model behaviors can be illustrated.

1. CHAMPION OBESITY AS AN ISSUE, AND BECOME AN AMBASSADOR FOR CHANGE IN OTHER SECTORS

Assess the baseline, and set locally appropriate targets for changes in diet, and physical activity

Monitoring the health status of populations is a core function of public health. In addition to tracking key health outcomes, this kind of data collection enables ongoing evaluation of the effectiveness of policy changes. By adopting international standards for measuring obesity outcomes, it becomes possible to evaluate the interventions on a wider stage, regional or global.

An important first step is to develop country-level reports on the prevalence of obesity, its risk factors (such as trends in diet and physical activity), and assessments of related infrastructure and systems (such as school-based health education, and public transportation). Assessments of obesity prevalence should be based on objective measures of people's weight and BMIs (self-reported weights and heights are of far less value, being often inaccurate, including when parents are asked to report the weight and height of their children).

Data on obesity outcomes and key social and environmental indicators will be crucial for establishing accountability and tracking progress. Set functional goals for improvement, such as greater access to fruits and vegetables, more opportunities for physical activity, and greater trust between sectors.

Establish multi-stakeholder partnerships for action on obesity, using inter-sectoral approaches

There can be no standard protocol for the population-level management of the emergence and prevalence of obesity. Engaging high-level support and leaders from other sectors of government and society is necessary for creating the sustained systemic changes that will help reduce obesity at the population-level. By centrally sponsoring local innovation, you can mobilize dozens, hundreds, or even thousands of partners to help shoulder components of the work that needs to be done at very local levels.

Inter-sectoral action is conceptualized as changing the relationships between sectors progressively through four stages: information-sharing, co-operation, co-ordination and integration.[53] Successful collaboration among stakeholders requires balancing sensitivity to contextual variations in power distribution among stakeholders, and establishing incentive structures that shape decision making in policy and practice.

Action steps:

- Identify and bring together leaders from various government sectors and stakeholder groups that are currently working on the problem of obesity. Initial meetings should provide a level playing field for information-sharing, and should lead to developing strategies for co-operation and co-ordination.
- Establish accountability for co-ordinated efforts – ideally, this should sit within a neutral party.
- Use budgetary mechanisms to share the benefits of long-term cost savings from inter-sectoral work. To the greatest extent possible, collaborative efforts should not draw on resources allocated to partner agencies' current mandates.

2. FIND INNOVATIVE AND ECONOMICALLY VIABLE WAYS TO ADDRESS OBESITY-PROMOTING FORCES IN THE FOOD ENVIRONMENT, AND LEARN FROM SUCCESSES IN SIMILAR COUNTRIES

The food system is one of the main drivers of the obesity epidemic. Only government has the power to ensure that markets deliver a range of choices that promote rather than constrain healthy living. Although unpopular with some stakeholders, fiscal responses to obesity are the least expensive to initiate, as well as the only measures that reach 100 percent of the population and generate cost savings within 20 years.[8]

Action steps

- Review and revise governmental and institutional food guidelines. Set nutrition standards for government-funded meal programs. Establish public-procurement guidelines that support local farmers and incentivize production of fresh fruits and vegetables.
- Establish food-labeling standards, and use food-marketing regulations, to protect children from advertising of unhealthy foods. Apply labeling standards to packaged foods, restaurant menus, and point-of-purchase marketing.
- Use fiscal and trade policy levers that support both healthy imports and healthy domestic food production. Policies that have the potential to reduce obesity and related NCDs include the following:[54]
    - Support infrastructure development that distributes fresh perishable foods to remote populations.
    - Reduce or eliminate subsidies for sugar, dairy, and meat if they currently support over-consumption of these products.
    - Consider levying taxes on foods high in sugar and fat and low on essential nutrients.
    - Subsidize small farms that serve local markets, to an extent equal to or greater than the large-scale food producers are subsidized.
    - Eliminate export incentives on foods of high nutritional value if they are expensive or in short supply domestically.
    - Support R&D of food processing and agricultural technology that creates a more healthful food supply.

When considering agricultural and trade policy responses to obesity, policy-makers should consider three key questions:[55]

1. Are current agricultural and trade policies aligned to support dietary goals?
2. Where and how could agricultural and trade policies intervene to help achieve dietary goals?
3. What trade-offs exist between pursuing reductions in obesity-related NCDs and pursuing other important national goals?

3. IMPLEMENT SETTINGS-BASED INITIATIVES IN AT LEAST ONE OF THREE CORE SOCIETAL INSTITUTIONS, ADDING A FOCUS ON OTHER INSTITUTIONS IN FUTURE YEARS

Making changes to institutions will require collaboration with other ministries and possibly lower levels of government. As acknowledged throughout this report, some countries are already heavily invested in obesity responses while others may be just starting to see the problem affecting their populations: the current level of progress will affect the way that new initiatives will suit local contexts.

Healthcare

The rapid increase in obesity rates worldwide calls for preventive-health services and weight-management interventions well beyond the capacity of any nation's health workforce. So the way forward is to extend primary care into community-based settings, increase the number and types of healthcare providers, and improve the training and capacity of all health workers to screen for or treat obesity: in that way, you can stimulate workforce development while reducing future obesity-related costs. Ideally, these adjustments would help to ensure obesity awareness and prevention is incorporated into the training and practice of community health workers, especially those dealing with women and children.

Action steps:

- Implement clinical screening and referral to multi-component interventions for adults and for children aged 6-18 years.
- Provide access to multi-component, individually adapted programs to change health behavior in respect of physical activity and nutrition, (In the case of children, their families should be included). This access is especially important for pre- and post-partum women.
- Expand provider networks by adopting community-based models and by contracting treatment providers.
- Revise training programs for health professionals to include prevention, diagnosis and treatment of obesity and related NCDs in adults and children.

Schools

Schools and childcare settings are among the best options for achieving long-term savings through prevention. Childhood through adolescence is the time when obesity is easiest to reverse at an individual-level, and a time when many children are accessible through crèches and schools.

Adolescents are very exposed to promotions of fattening food, and teenage girls in particular have major risks associated with physical inactivity due to social and cultural patterns. Lifelong body size and metabolism are calibrated during this period of physical development. The teen years may be a last chance to reach a population that is easily amenable and that enables strong long-term returns.

Working to promote health for children and adolescents is a politically viable response, because the public understands that young people are a vulnerable population that can't be blamed for their health outcomes.

Action steps:

- Develop and implement multi-component school-based programs to promote good nutrition and physical activity. Components of school-based initiatives should address the following factors:[56]

  - Transportation to and from school.
  - The food environment immediately outside schools.
  - The curriculum.
  - The food and physical-activity environments within schools.
  - Health services.
  - Health promotion for staff.
  - Recognition of achieving changes in the above.

Worksites

Worksites for adults are analogous to schools for children in that they provide a closed environment where people spend a considerable time and where important opportunities for intervention are available. Adulthood is a time when obesity has the greatest negative impact on productivity and where its co-morbidities are likely to develop, thereby contributing to healthcare costs for business and the public sector. Helping adults to lose weight and develop even moderately healthier habits can also have important co-benefits for families and children. Late adulthood is important because obesity in the last years of life adds considerably to end-of-life healthcare expenditures. At this stage, even a 5 percent weight loss can mitigate those costs substantially.

Action steps:

- Enable workplace health checks and referral to multi-component treatment interventions.
- Work with business leaders to initiate multi-component workplace initiatives that:[57]

  - Connect health programs to business objectives.
  - Ensure management support and communications.
  - Provide incentives for participation.
  - Create supportive physical and social environments.
  - Integrate occupational health and safety standards.

PRIORITY ACTIONS: TOMORROW'S CHECKLIST

The single most important thing a Minister of Health can do to address obesity is to champion the issues and raise broader awareness – about both the risks of inaction and the opportunities for action. By taking the lead in establishing multi-stakeholder partnerships for policy development, health ministries can mobilize resources, information, and authority that typically fall beyond their purview, and create supportive physical, social, and economic environments to combat obesity at a country-level.

Reducing obesity is an achievement in itself, but it also can lead to parallel gains in other priority areas. These additional benefits may be useful incentives for other leaders, to sign up to an obesity action agenda:

- Promoting economic growth.
- Reducing healthcare expenditures.
- Protecting vulnerable populations.
- Building ecologically sustainable infrastructure.
- Developing local human resources for health promotion.
- Inspiring health promoting entrepreneurship.

The following checklist of actions, to increase the pace of progress on reducing obesity, can be initiated as soon as tomorrow:

- Develop an obesity action agenda, and mobilize opinion-setters who can join in voicing the urgency of this issue. Attempt to quantify the extent, trends and impacts of obesity on health, healthcare expenditures and economic productivity.
- Create a shortlist of successful examples that might recruit and inspire partners to commit to achievable short- and long-term goals.
- Identify existing resources and win-win opportunities that can be leveraged in this effort. Convince others to prioritize synergistic actions.
- Review monitoring and evaluation data, in order to recognize progress and continually improve interventions.

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