



FIGHT AGAINST OBESITY

The importance of fruit and vegetable intake in a new context

This month the focus is on the value of fruit and vegetable intake when combatting the remarkable increase in the global burden of obesity. This epidemic is already overwhelming lower income countries as well as the more affluent with escalating rates of diabetes and all its associated life-threatening handicaps. Obesity's later complications of cardiovascular disease and cancers are also already evident in Europe. Indeed, diet is now the top cause of the global burden of disease. So, obesity is now a fundamental societal and economic problem which cannot simply be tackled by children's education and suggestions that adults need more exercise and dietary change because these are only modestly effective as highlighted by Darfour-Oduro *et al.* Bray notes that we don't choose to be fat, so we need economic, regulatory and cross-government measures to shift our whole food supply and reduce car use. This will help the poorer sections of society even more than the wealthy as highlighted by Ancilotto and Olstad so that we eat differently and automatically exercise as a whole society.

We are still a long way from even approaching the integrated global policy goal which in 1990 we developed for WHO to prevent both chronic adult diseases, malnutrition and vitamin deficiency with a 400g per day minimum population average intake of fruit and vegetables - this is even more important now for the UN goals of sustainable development. So, Europe should really be leading the way with new integrated cross-country economic and regulatory measures to change our food supply.

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Policies to increase fruit and vegetable consumption and physical activity in 49 low- and middle- income countries

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According to the World Health Organization (WHO), non-communicable diseases (NCDs) have become the leading cause of death worldwide, with ~80% occurring in low- and middle-income countries (LMICs)¹. Today, there is broad consensus on the health-promoting effects of regularly consuming fruit and vegetables (F&V), as evidenced by numerous scientific studies: eating F&V daily helps combat NCDs like heart disease, cancer, diabetes, obesity and many other chronic diseases.

2.7 million lives could be potentially saved if we sufficiently increase F&V consumption²! Due to the benefits of F&V consumption on health, the joint FAO/WHO committee recommended in 2002 a minimum daily intake of 400g of F&V and made it an ultimate goal for all countries in 2004³.

Furthermore, the prevalence of physical inactivity- considered as a major risk factor for NCDs by the WHO- is also increasing among LMICs⁴. The WHO recommends that children and youth (5-17 years old) practice at least 60 minutes of moderate- to vigorous-intensity physical activity (PA) daily, and adults at least 150 minutes of moderate-intensity aerobic PA per week⁵. Given that these behaviours are important modifiable risk factors for NCDs prevention, the WHO encourages the development of policies to increase F&V consumption and PA, mostly in LMICs.

We reviewed policies to increase F&V consumption and PA in 49 LMICs* between 2004 and 2013.

Of the 49 countries, 57% had policies** to increase F&V consumption and 76% had policies** to promote PA. 51% had policies to increase both.

Policies to increase F&V consumption

28 countries out of 49 had policies to increase F&V consumption and 21% of them had adopted their policy. We have grouped the countries based on their policy's theme (Table 1):

Table 1: Country specific policies to increase F&V consumption presented by World Bank regions and grouped based on themes

Policy's theme	Countries	Number of countries
General public	Malawi, Namibia, Jordan, Lebanon, Yemen, India, Maldives, Sri Lanka, Belize, Jamaica, Dominica, Grenada, St. Vincent and the Grenadines, St. Lucia, Fiji, Indonesia, Malaysia, Philippines, Thailand	19
School-based	Ghana, Malawi, Seychelles, Zambia, Fiji, Philippines, Thailand	7
WHO recommendations of the F&V daily servings	Ghana, Namibia, Lebanon, Sri Lanka, Malaysia	5
Community-based	Malawi, Zambia, India, Fiji	4
Mass media	Jordan, Indonesia, Malaysia, Mongolia	4
Environment	Sri Lanka, Indonesia, Philippines	3
Economy	Botswana, Philippines	2

For example, Malawi has a school-based policy to establish school gardens and cooking demonstrations in all public primary schools. It also has a community-based policy to conduct community level demonstrations on the preparation and consumption of nutritious foods such as F&V, and a guideline targeting the general public to eat a fruit after every meal. In Namibia, one of the guidelines for the general public is to eat a variety of F&V, preferably fresh and locally available indigenous varieties. As an example of policies targeting the environment, Indonesia encourages food farming to ensure accessibility and availability of food balanced nutrition including F&V. Furthermore, we have noted that the Philippines has developed a policy targeting the economy by encouraging the provision of subsidies/tax breaks on healthy foods such as F&V so as to increase consumption. Among the five countries that developed strategies to meet the WHO recommendations, Ghana, Sri Lanka and Malaysia urge eating at least 5 servings of F&V daily while Lebanon recommends consuming 2 servings of fruit and 2-3 servings of vegetables daily.

Given the limited number of countries that have policies targeting the environment and economy, LMICs should formulate more strategies targeting these areas. If F&V are not available nor affordable, education alone will be inadequate to increase F&V consumption, and is supported by recommendations by Miller et al.⁶

Policies to promote PA

There were more policies formulated to increase PA compared to F&V consumption. Thirty-seven countries out of 49 had policies to promote PA, and 5% had adopted their PA policy. Most of the strategies are targeting the general public and only 9 countries out of the 37 formulated policies to meet the WHO daily PA recommendations. In addition, 8 countries developed school-based policies to promote PA. Among them, Ghana, Maldives, Dominica, Grenada and Guyana recommend mandatory physical education in schools.

However, despite the progress made, LMICs are still lagging behind in developing policies to meet the WHO recommendations aimed at increasing F&V consumption and PA.

* The LMICs included in the study were Benin, Botswana, Ghana, Malawi, Mauritania, Namibia, Senegal, Seychelles, Sudan, Swaziland, Tanzania, Zambia, Algeria, Djibouti, Egypt, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, Yemen, India, Maldives, Pakistan, Sri Lanka, Argentina, Belize, Bolivia, Costa Rica, Dominica, Grenada, Guatemala, Guyana, Honduras, Jamaica, Peru, St. Lucia, St. Vincent and the Grenadines, Suriname, The former Yugoslav republic of Macedonia, Fiji, Indonesia, Malaysia, Mongolia, Myanmar, Philippines, Thailand and Tonga.

** In the article, a policy could also be an action plan or a guideline.

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Obesity: A Chronic Relapsing Disease Process

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The title “Obesity: A Chronic Relapsing Disease Process” comes from the position paper by the World Obesity Federation related to the ongoing discussion of whether obesity is a disease¹. It focuses on the implications for ill-health and social disability that are associated with excess body fat. That obesity is a chronic problem which frequently relapses after treatment is well known². Indeed, this concept was suggested prior to the American Revolution more than 250 years ago by Malcolm Flemyng MD, an English physician in the 18th century who said: “*Corpulency, when in an extraordinary degree, may be reckoned a disease, as it in some measure obstructs the free exercise of the animal functions; and hath a tendency to shorten life, by paving the way to dangerous distempers.*”³. Although this phrasing is not one we might use today, the sentiment is the same – obesity is a disease process. Fifty years later in 1816, William Wadd, a British surgeon picked up the torch again with this statement: “*Fat.... when in excess – amounting to what may be termed OBESITY – is not only in itself a disease, but may be the cause of many fatal effects, particularly in acute disorders.*”⁴.

Obesity-related diseases and complications

Excess body fat, particularly fat located centrally in the body, produces a variety of diseases through the chemicals made by enlarged and often more numerous fat cells. Obesity also produces disability by its external appearance and the weight of the extra load on bones and joints. Both endometrial and breast cancer, for example, are related to the female hormone, estrogen, which can be produced in fat cells – more fat equals more estrogen. This is particularly true after menopause when body fat becomes the main source of estrogen. The metabolic demands from extra fat can also exacerbate the risk of diabetes by increasing the demand for insulin. Reducing body weight reduces the risk of developing diabetes in individuals with prediabetes and increases the likelihood of reverting from diabetes to normal glucose tolerance.

We don't choose to be obese!

One important idea, however, is missing from the statement by the World Obesity Federation. It is the fact that obesity is a “stigmatized state”. No one voluntarily decides they want to be “obese”, since people with obesity are often looked on with derision by others in our society. Children with obesity are often the victims of teasing and bullying. This concept of obesity as a stigmatized state has permeated the field of obesity research since before the founding of the International Journal of Obesity in 1977. It is widely believed that if people with obesity weren't so weak-willed their problems would dissolve away. This idea has also biased many healthcare workers who view obesity as a personal, if not moral, responsibility.

Weight loss is the key to prevent most of obesity's detrimental effects

The idea behind focusing on the “chronic relapsing” nature of this disease process is to provide a new and more appropriate focus for the concept that obesity is a time-bomb – a time-bomb that threatens to further exacerbate such important health problems as diabetes and heart disease. The good news is that weight loss can lengthen life span, reduce the incidence of cardiovascular disease, reduce the risk of developing diabetes and the problem of non-alcoholic fatty liver disease. Reducing the risk of developing diabetes among people who have a high risk of diabetes can occur with a weight loss of only 5%. Larger weight losses of 10% or more reduce the risk of cardiovascular diseases. The World Obesity Federation position paper sets the ground work for health care workers who wish to help individuals with obesity achieve a more healthy weight. This important position statement follows the lead for the American Medical Association and several other professional societies that claimed in 2013 that “Obesity is a disease”⁴. The World Obesity Federation statement extends this idea by focusing on the “process” by which obesity can produce its many detrimental effects and noting its chronic and relapsing nature. Weight loss is a key strategy in reducing the risk of the time-bomb for obesity from expanding further and the World Obesity Federation statement provides a framework for moving forward toward helping reduce the prevalence of obesity.



Based on: Bray GA, Kim KK, Wilding JPH; World Obesity Federation. Obesity: a chronic relapsing progressive disease process. A position statement of the World Obesity Federation. *Obes Rev.* 2017 Jul;18(7):715-723.

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Inequities in obesity and obesity-related behaviours: A priority for policy-making

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Socioeconomic position (SEP) refers to individuals' social and economic position in relation to others' and is often measured by assessing income, education and/or occupation¹. Individuals with a lower SEP are more likely to be obese and to have poorer dietary and physical activity behaviours relative to those who are more advantaged^{2,3}. Given that obesity and obesity-related behaviours are associated with increased risk of chronic disease⁴, their socioeconomic patterning may partly explain why disadvantaged groups have a higher risk of chronic disease. These health differences are referred to as health inequalities/inequities.

Universal vs. targeted policies to reduce obesity and improve obesity-related behaviours

Two main types of policies have been used to address health inequities. Targeted policies aim to address determinants of health in the most disadvantaged groups (e.g. food vouchers for low-income groups), whereas universal policies are aimed at the entire population (e.g. nutrition labels on pre-packaged foods)⁵. In a previous systematic review we found that the majority of universal policies had no impact on inequities in obesity and obesity-related behaviours⁶. This article describes findings from a second systematic review in which we synthesized evidence from controlled studies pertaining to the impact of targeted policies on anthropometric, dietary and physical activity outcomes amongst socioeconomically disadvantaged children and adults. To be included in this systematic review, studies had to be published between 2004 and 2015, evaluate the impact of a policy targeted at disadvantaged individuals in a developed nation, include a control group, and report an anthropometric, dietary or physical activity outcome.

Organizational policies

Eight studies assessed the impact of organizational policies implemented as part of 7 distinct multi-component interventions in disadvantaged schools. Six of the 7 interventions were effective. Studies reported a greater impact on dietary and physical activity behaviours than on anthropometric outcomes. Common elements of successful policy-containing interventions included nutrition standards for foods and beverages, enhancements to physical education classes, additional physical activity opportunities, school self-assessments, and teacher, child and parental nutrition and physical activity education. Given the multi-component nature of the interventions, it was not possible to attribute any positive impacts to policy specifically.

Evidence from government policies

Ten studies assessed the impact of single-component government policies in disadvantaged children and/or adults. Government policies were less successful in changing physical activity relative to dietary behaviours, with only two studies examining anthropometric outcomes. Three broad types of policies were examined: 1) Provision of information/education; 2) Fruit and vegetable subsidies; and 3) Changes to built environments. The first two policy types showed evidence of effectiveness in disadvantaged children, but not in disadvantaged adults. Changes to built environments were not effective in disadvantaged children or adults. Caution is warranted, however, as there were only 2-4 studies of each policy type.

The importance of interventions in childhood to reduce obesity and improve obesity-related behaviours

This synthesis of evidence from controlled studies found the largest quantity of high quality evidence of effectiveness for comprehensive interventions that included school policies, and government policies targeting socioeconomically disadvantaged children in schools. No studies evaluated the impact of organizational policies directed at disadvantaged adults, whereas all government policies assessed in this review that targeted disadvantaged adults proved ineffective. These findings highlight the importance of focused interventions in childhood to ameliorate the negative obesity-related manifestations of low SEP, along with gaps in knowledge pertaining to effective policies in community settings and in adults.

Table: Summary of study results

Policy type	Population	Summary of study outcomes	Number of studies with one or more positive outcomes		
			Anthropometric	Dietary intake	Physical activity
Organizational	Children	Mostly positive All in schools	3/6	3/4	2/3
	Adults	No studies	n/a	n/a	n/a
Government	Children	Mostly positive Most in schools	1/1	4/4	1/2
	Adult	No impact All in communities	0/1	0/2	0/2
	Overall		1/2	4/6	1/4
	Number of studies with one or more positive outcomes, by policy type				
		Information & education	Fruit & veg subsidies	Changes to built environments	
	Children	2/2	3/3	1/2 (weakly positive)	
	Adult	0/1	0/1	0/3	

Based on: Olstad DL, Ancilotto R, Teychenne M, Minaker LM, Taber DR, Raine KD, Nykiforuk CIJ, Ball K. Can targeted policies reduce obesity and improve obesity-related behaviours in socioeconomically disadvantaged populations? A systematic review. *Obes Rev* 2017;18(7):791-807. <https://onlinelibrary.wiley.com/doi/abs/10.1111/obr.12546> Copyright © [2017, World Obesity Federation]

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