PAN AMERICAN HEALTH ORGANIZATION
WORLD HEALTH ORGANIZATION

37th SESSION OF THE SUBCOMMITTEE ON PLANNING AND PROGRAMMING OF THE EXECUTIVE COMMITTEE

Washington, D.C., USA, 26-28 March 2003

Provisional Agenda Item 9

SPP37/8 (Eng.)
5 February 2003
ORIGINAL: ENGLISH

OBESITY, DIET, AND PHYSICAL ACTIVITY

Rates of overweight and obesity have reached epidemic proportions worldwide. In the Americas, the epidemic transcends socioeconomic boundaries, afflicting both rich and poor, and individuals across all age groups.

The rapid increase in obesity rates in recent years has occurred in too short a time to enable it to be attributable to any significant genetic changes in populations. On the contrary, changes in lifestyles and the environment over the last half century are more likely to explain the epidemic. For instance, new technologies and more efficient agricultural production have made possible what for many centuries was an unattainable goal: the year-round availability of food at affordable prices for larger segments of the population. In addition, more sedentary occupations, motorized transportation, increased television viewing, and ubiquitous labor saving devices increasingly favor physical inactivity.

Treatment approaches to obesity control have shown only modest results and are unlikely to halt the epidemic; therefore, preventive and promotional strategies are most likely to succeed at the population level. The role of public health in the Americas should be to make healthy choices the easiest choices, and the objective over the next decade is to bring about key behavioral changes at the population level.

Physical activity need not be strenuous in order to produce health benefits. The promotion of at least thirty minutes of moderate physical activity per day is a realistic goal. This needs to be accompanied by greater accessibility to recreational spaces and safety on the streets, sustained promotion of walking and biking in the city, and the institutionalization of physical activity in the workplace and schools. On the other hand, improving eating patterns requires effective promotion of healthy foods, more rational pricing, and special consideration to subsidies and regulation of advertising of nutrient-poor foods.

There is increasing awareness that preventive interventions work, and treatment costs are beyond the financial means of individuals and the public health systems in most middle- and low-income countries. Interventions for obesity, prevention and control, should be complementary with current efforts to end undernutrition and specific nutrient deficiencies, under a new paradigm that promotes optimal growth, development and long and healthy life. Likewise, integrated plans and programs on obesity and noncommunicable disease are also needed given the commonality of their causes.

The Subcommittee on Planning and Programming is requested to recognize obesity and its co-morbidities, along with physical inactivity and poor quality diets, as a major public health threat and priority for action in the Region, and to propose ways in which the Pan American Health Organization (PAHO) can promote and support an integrated strategy for the prevention and control of obesity.

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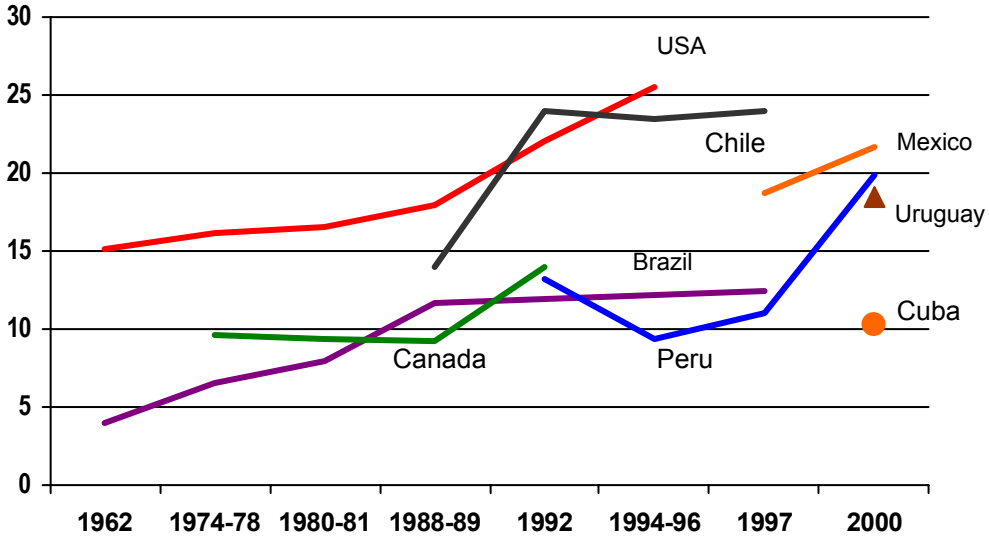
Obesity in the Americas:
the Challenge to Promote Healthy Nutrition and Active Living

Prevalence of Obesity and the Health Transition in the Americas

1. The prevalence of overweight and obesity is increasing worldwide at an alarming rate. Both developed and developing countries are affected, and the problem appears to be increasing rapidly in children as well as in adults. The obesity epidemic in the Americas transcends socioeconomic boundaries, affecting both rich and poor and individuals across all age groups.

2. In countries where national representative data exist for more than one point in time, the prevalence of obesity, defined as body mass index (BMI) $\geq$ 30 kg/m^2, has an upward trend (Figure 1). According to the estimates provided by the National Health and Nutrition Examination Service (NHANES III) (1988–1994), 20% of all men and 25% of all women in the United States of America are obese. Canada trails the United States, with 13.4% obese adults. In Brazil, obesity affected 6% of men and 13% of women in 1989. In Peru, the prevalence of overweight adults increased by 50% between 1992 and 1996. Obesity among women was notably higher at 18% in the high socioeconomic level, 24% in the mid level, and 26.5% in the low level. Among men, the prevalence of obesity was 17%, 15%, and 13.8%, respectively. Data from Argentina, Colombia, Mexico, Paraguay, and Uruguay also show more than 15% of these countries' populations are obese.

Figure 1. Obesity (BMI $\geq$30) Trends Among Women in the Americas



Source: Data from national representative surveys.

3. Even more disturbing, the trend is also growing among the Region's children. Twice as many children in the United States are overweight now compared to two decades ago. In Chile, Mexico, and Peru, an alarming one in every four children aged 4 to 10 is overweight.

4. While genetic susceptibility may explain about 30% of the observed obesity, changes in lifestyles and in the environment over the last half century are more likely to explain the recent epidemic of obesity. In fact, environmental factors are capable of overriding biological mechanisms responsible for keeping body weight stable over the long term. The increase in overweight and obesity has been extensively documented in industrialized societies, indicating a transition from a positive to a negative association between income and obesity over the past quarter of a century. A similar phenomenon is now emerging in developing countries and in some middle-income countries in Latin America, where higher rates of obesity among the poor are being observed, especially in urban areas.

Determinants of Obesity

Historical Overview

5. Obesity is a consequence of an energy imbalance—i.e., when energy intake exceeds energy expenditure over an extended period of time. Many complex and diverse factors can give rise to a positive energy balance, but it is the interaction between a number of these factors, rather than the influence of any single factor, that is thought to be responsible.

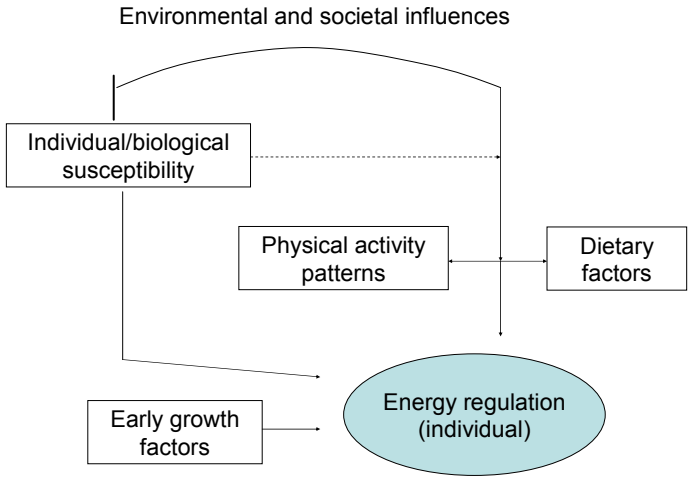
6. Energy regulation is influenced by various external factors. Powerful societal and environmental forces influence energy intake and expenditure and may overwhelm the physiological processes within individuals. In fact, those forces act on pre-existing genetic and biological factors that probably developed over millions of years transforming the human body into a highly efficient energy-saving (fat storing) "machine."[1] It was most likely this mechanism that has enabled survival over a long period of human history, when recurring periods of food shortages were the norm. There is a growing body of evidence to support the belief that the current epidemic manifestation of obesity is more the result of rapid technological and cultural changes over the past 50 years than a manifestation of some biological evolutionary factor, especially in view of the fact that the human genetic make-up has remained unchanged for thousands of years.

[1] True heritability of BMI in large sample sizes was likely to be in the range of 25%-40%. Recent studies have shown that the amount of abdominal fat was influenced by a genetic component accounting for 50%-60% of the individual differences.

7. A worldwide phenomenon of secular weight and height gains first began to be detected about a century ago, but it was not until recently that obesity emerged prominently at a global scale. Recent economic studies highlight the fact that technological change has at once raised the cost of physical activity and lowered the cost of caloric consumption. The latter is largely driven by improved technology and more efficient agricultural production, while the former becomes more costly as domestic and work activities become increasingly sedentary. The result of these changes is that individuals must make larger investments in time and money in order to achieve the same levels of physical activeness as their ancestors.

8. The following sections briefly review the existing evidence on individual factors (e.g. diet, physical activity, and early growth) and environmental determinants affecting obesity (Figure 2). In examining these elements, this document also offers important prevention and control considerations that set the stage for the proposed actions presented at the end of the document.

Figure 2. Factors that Influence the Development of Obesity



Adapted from WHO, 2002

Dietary Factors and Physical Activity Patterns

9. The two most important factors associated with *increased* risk of overweight are the consumption of high-energy dense (high in fat or sugar) foods and preparations coupled with sedentary lifestyles over a medium/long period of time. On the other hand,

there is convincing evidence for *decreased* risk with regular physical activity[2] and high consumption of dietary fiber. Evidence is provided by interventions that promote supportive school environments, including improved school foods and physical education programs, as well as strategies that promote linear growth. The latter is a reminder that current efforts to combat childhood stunting can serve dual purposes.

Dietary Factors

10. Dietary factors can be divided into two categories: host (individual characteristics and behaviors) and vector (foods and beverages). The most critical points highlighted here have been reviewed extensively by the Joint WHO/FAO Consultation on diet, nutrition and prevention of chronic diseases (2002).

11. While there is little information on the effects of host factors on obesity, such as snacking and eating out, there is much convincing evidence with regard to the vector factors. Evidence shows that dietary fat leads to obesity by way of its low satiety properties, thus favoring passive over-consumption of total energy. In other words, the total energy intake is the critical issue regardless of the source of calories. A primary emphasis on narrowly controlling fat consumption may be misleading since people often tend to compensate by resorting to a more liberal consumption of "light" products, thereby, in effect, increasing overall energy consumption. The second concern relates to the amount of sugar in foods. There is probable evidence that soft drinks high in sugar, when consumed in large quantities, may induce weight gain by increasing appetite and, consequently, energy intake.

Physical Inactivity

12. Physical activity, defined as "any bodily movement produced by skeletal muscles that results in a substantial increase over the resting energy expenditure," ranges from the performance of occupational work and household chores to recreational physical activity, such as sports and exercise. Decreased physical activity and/or increased sedentary behavior play an important role in weight gain and the development of obesity. For example, the amount of time spent television–watching by young children has shown to be predictive of BMI in later years, and a low level of physical activity during periods of leisure in adults has been shown to be predictive of substantial weight gain ($\geq$ 5 kg) in 5 years' time. A number of studies conducted in Latin America have also reported that inactivity is strongly associated with obesity.

[2] One hour or more of moderate/intense physical activity, five days a week. Not to be confused with the recommendation of half-hour of moderate exercise (walking, dancing, bicycle riding, etc) at least five days a week to maintain good health.

Early Growth Factors

13. Intrauterine growth retardation (IUGR) and large size at birth (≥ 4,000 grams) have been implicated in association with noncommunicable diseases (NCD) such as stroke, diabetes, and hypertension, later in life and possibly obesity. The rapid catch-up growth that follows growth deficits in early childhood has also been implicated as a causal factor. The epidemiological evidence for the latter is considerable but is stronger for the risk of NCD development than obesity. Current efforts to prevent and control stunting in the Americas, chiefly with the goal of promoting optimal development, improved work capacity, and better obstetric outcomes, provide additional support for continuing public health efforts in this area.

14. In the same vein, to the well-known benefits associated with exclusive and prolonged breastfeeding, the probable effects in preventing chronic diseases and obesity can now be added. This provides another opportunity for building a common nutritional platform in transitional societies in the Region now facing the double burden of disease.

15. The link between early growth factors and the development of obesity remains an area of ongoing research. What is not controversial is the fact that obesity during adolescence is highly associated with obesity later in life. Given that obesity rates are rapidly increasing as the population ages, efforts to control the problem at the early ages and at the school–age level hold great promise.

Environmental and Societal Influences

Economic Development and Rapid Nutritional Transition

16. In most of the world's developing countries, economic growth, industrialization, and widespread trade have brought a number of improvements in the standard of living and in the services available to the population. However, it has also produced various negative consequences, including harmful nutritional and physical activity patterns.

17. Today's food systems based on an industrial approach to agriculture make most types of foods available year–round regardless of season. In addition, the supply of high-energy and high-fat processed foods is growing at a rapid pace. While this phenomenon has contributed to improved food availability, it has not necessarily addressed the problem of undernutrition, nor has it improved the overall nutritional quality of the food supply.

18. The decline in energy expenditure that has accompanied modernization is evidenced by a more sedentary lifestyle in urban areas. Motorized transportation, low-density urban developments (urban sprawl), mechanized equipment, and labor-

saving devices have freed people from performing physically arduous tasks and otherwise discouraged simple activities such as walking, bicycle–riding, and stair–climbing. Moreover, leisure time is now increasingly dominated by television–viewing and other physically inactive choices.

Social Class and Education

19. By adopting healthy dietary practices and engaging in more physically active living, the highly educated segments of middle-income societies, in most of the world, have escaped some of the negative consequences of economic growth. Such behavioral changes explain in part the weight reduction observed especially among high-income women, as in the case of Brazil, where obesity rates have decreased from 13% to 8% over the last 30 years.

20. Although many health gains can be achieved through better education and broader access to information on the benefits of healthy food choices and sustained physical activity, these are unlikely to stall the obesity epidemic in and of themselves. The tobacco control campaigns in the United States are a good example of how a combination of policies, norms, incentives, ban on smoking in public areas, and an intensive communication campaign can bring about behavioral change.

Culture and Personal Beliefs

21. Specific attitudes towards health, fitness and activity, and body image in some cultures may also lead to behaviors associated with the development of obesity. For example, among some indigenous populations in Latin America and the Caribbean, an excess in body weight is perceived as desirable and an indicator of health and well-being.

Health Consequences of Obesity

22. The health consequences of obesity are numerous and varied, ranging from an increased risk of premature death to several non-fatal but nonetheless debilitating conditions that adversely impact on the overall quality of life.

Obesity-Related Mortality

23. It is now a well-known fact that the longer the duration of obesity, the higher the risks of mortality and morbidity. For example, severe obesity is associated with a 12-fold increase in mortality in 25–35 year-olds compared with lean individuals. It is also important to note the increase in mortality with increased relative body weight in both men and women under age 50.

Health Problems Associated with Obesity

24. The risks of suffering from diabetes, gallbladder disease, dyslipidemias, insulin resistance, and sleep apnea are greatly increased in the obese population (relative risk [RR] greater than 3). The risks of chronic disease and osteoarthritis are moderately increased (RR 2-3), and the risks of certain cancers, reproductive hormone abnormalities, and low back pain are slightly increased (RR 1-2).

25. Although there are many health problems associated with child obesity, the most important long-term consequence of childhood and adolescent obesity is its persistence into adulthood, with all the associated health risks. Obesity is more likely to persist when its onset is in late childhood or adolescence.

Psychological Problems Associated with Obesity

26. Obesity is highly stigmatized in many industrialized societies, in terms of both negative perceptions regarding bodily appearance and generalized attitudes that stereotype obese individuals as lazy, weak-willed, and unhygienic in their personal habits. The resultant discrimination often serves to deter this segment of the population from seeking much-needed medical assistance for their condition, including treatment for depression and eating disorders.

Economic Costs of Obesity

Estimates of the Cost of Obesity

27. Studies estimating the cost of obesity to society are scarce. The few existing ones have been conducted in developed countries and provide critical input to health care providers and policymakers.

28. Studies reported by WHO in 2000 (i.e., in Australia, France, the Netherlands, and the United States) indicate that 2%-7% of national health care costs can be ascribed to treatment and control of overweight and obesity; the highest cost (US$ 46,000 million) was incurred in the United States. Recent estimates (2001) from the Medical Expenditure Panel Survey in this country indicate that costs for inpatient and ambulatory care are increasing by $395 per year per obese individual, while smoking causes a $230 increase and aging a $225 increase. In relative terms, obesity increases health care costs by 36% and medication costs by 77% as compared to those for an individual of normal weight.

29. Rough estimates of the cost of obesity treatment in Peru suggest that if drugs were hypothetically used as the principal intervention, the effort would cost approximately 50% of the current national health budget. In the United States, estimates (2000) from the Centers for Disease Control and Prevention (CDC) suggest that medically treating obesity in this country would equal the total amount currently expended in treating major chronic conditions (approximately $55 billion annually).

Economic Costs and Benefits of Obesity Treatment and Prevention

30. There are very few studies that address the issues of economic costs of specific obesity treatment and preventive interventions. Most are cited in the WHO technical document but are marred with several technical flaws that prevent definitive conclusions. However, studies related to diabetes control and obesity prevention suggest that public health interventions, i.e. mass media campaigns and group counseling programs, might result in net savings after considering operational program costs. Furthermore, preventive strategies may be more cost-effective, considering the extraordinary costs involved in providing discretionary treatment services such as those currently employed in developed societies, where new technologies and drugs continuously exert a sizeable pressure on health costs.

Prevention and Control of Obesity in Populations: Making Healthy Choices Easier Choices

31. Prevention strategies tend to be favored today on both technical and financial grounds. Nearly one in two adults in the Americas is overweight (BMI >25kg/m^2). There is increasing awareness that preventive interventions work, and treatment costs are beyond the financial means of individuals and the public health systems in most middle- and low-income countries.

32. Large-scale interventions to prevent and control obesity nationally suggest that obesity prevention at the population level may be difficult to achieve in the short term and that the promotion of healthy diet and physical activity should not exclusively focus on obesity control but on changing inadequate dietary and physical activity patterns, as well.

Promotion of Physical Activity as an Everyday Lifestyle

The New Paradigm in Physical Activity Promotion: Moderate Physical Activity

33. Sedentary lifestyles are not simply a matter of individual choice. Traditionally, studies on determinants of physical inactivity have emphasized individually assessed variables (e.g. gender, cultural factors, age, perceived barriers, etc). However, it is

increasingly evident that these variables explain only a small portion of the variance in physical inactivity. Environmental factors, such as accessibility to recreational spaces, opportunities for physical activity, aesthetic factors, climatic conditions, and safety concerns provide clearer explanations for physical inactivity patterns.

34. Today's cities are designed for motorized transportation, and technology continues to introduce new and improved mechanized equipment and labor-saving devices both in the home and the workplace. Urban planners, environmentalists, and transit and sports authorities are, in many cases, already inadvertently converging in their work to create a "better place to live," providing a prime opportunity for the development of broad and all-inclusive public coalitions to promote physical activity as an everyday lifestyle for their respective communities.

35. The present goal of thirty minutes of moderate physical activity most days of the week is based on strong evidence from several epidemiological and clinical studies. (While this might not necessarily be the ideal approach to lose weight in the short term, it is nonetheless considered to be a good starting point that also improves health status). The physical and mental health benefits of moderate and regular physical activity (e.g. walking and bicycle riding) are similar to the benefits for a structured approach to physical activity (e.g. aerobics or practicing sports.) Furthermore, lifestyle interventions, such as those described above, can be easily integrated into daily life.

36. Lifestyle interventions at the population level result in positive health outcomes. For example, an association between obesity rates and non-motorized transportation has been observed in several developed countries. In the Netherlands and Sweden, where the rates of pedestrian walking and bicycle riding are highest, obesity is less of a problem than in other car-bound societies, such as those in Canada, the United Kingdom, and the United States.

The Importance of Cities in Physical Activity Promotion

37. Communities and local governments in the Latin American and Caribbean (LAC) countries are already engaged in creating healthier environments and investing local resources to promote exercise and physical activity in their communities. It is important to raise greater awareness about and reinforce these achievements and to work further to effectively and efficiently orient efforts in promoting active living and better health.

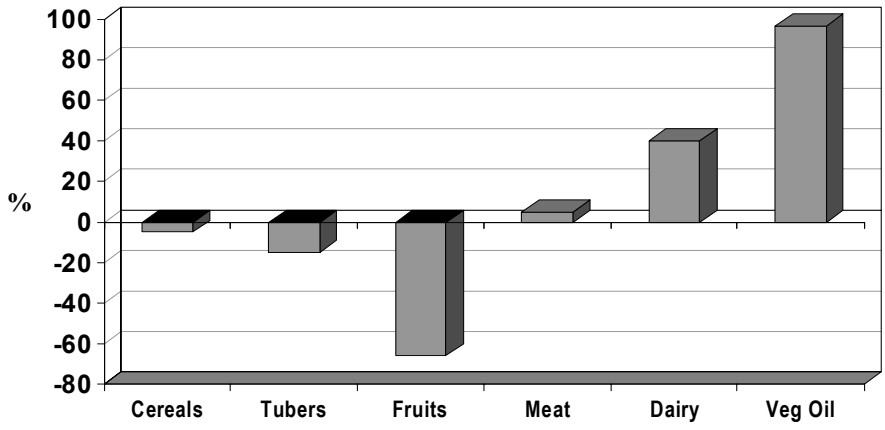
38. Municipal and local governments play a key role in fostering the public health agenda of physical activity promotion for the following reasons:

- They are already involved in improving recreational public spaces and sports;
- They have decision-making power over the physical environment, transportation systems and public safety and have influence over the legislative process;
- City governments can bring together different partners to build coalitions; and
- In most cities, there is already an important demand from the public for actions on issues related to transportation, recreation, crime control, etc.

Promotion of Healthy Diet

39. Food consumption patterns have undergone dramatic changes in LAC countries over the last two decades. Figure 3 exemplifies the detrimental changes of abandoning vegetables and other traditional or natural foods, which are high in complex carbohydrates and the increased supply and demand for processed foods, refined grains, oils, and meats. Lower prices of these latter foods coupled with powerful marketing strategies are key mechanisms in shaping food consumption behavior.

Figure 3. Changes (%) in the consumption of various food groups in seven Brazilian cities, 1962-1988



Adapted from Monteiro C, 2000

40. The growing dominance of industrial development in agriculture, focuses only on a small number of highly profitable producers, curtailing the production of various vegetables and some cereals. In fact, the decreasing availability of fruits is a serious problem that has recently drawn the attention of WHO. In Europe, for instance, nearly 14 countries have a per capita daily fruit availability that is lower than the recommended 600

grams/day (400 grams/day of edible food). This suggests a possible need to put important trade or production policies in place to remedy a nutritional problem.

41. It is apparent that if changes in human food consumption patterns are to be made, much needs to be done in areas that are not within the traditional realm of public health. Healthy public policies are needed to foster local production and markets for healthy foods, in addition to education and communication on dietary recommendations about healthy eating, including (1) the increased consumption of fruits, vegetables, and unrefined grains and nuts, (2) preference of fish and poultry over red meats and for low-fat daily, and (3) the consumption of healthier vegetable oils in moderation. Special consideration and further examination are required in the areas of regulation and taxation to modify food preferences and dietary behavior.

42. These issues certainly raise concerns on the effect of trade liberalization on health. For instance, according to the World Trade Organization, commodities can be classified into four categories: (1) legal and beneficial, (2) legal and of doubtful benefit, (3) legal and harmful, or (4) illegal and harmful. Tobacco is an example of a *legal and harmfu*l product for which regulation and taxation have been instrumental in reducing consumption. A product with high content of saturated fat, for instance, would fall in the category of *legal and of doubtful benefit* since it is not the product itself that is harmful but the amount in which the product is consumed. According to current trade regulations, only contaminated foods can be classified as hazardous commodities.

43. At this point, several questions arise: should tariffs and taxes be used to regulate the influx of food products at the national level when the product is regarded as a threat to people's health? And in doing so, can countries defy established world trade rules without affecting other economic and social interests of their own? And lastly, how might public health practitioners and politicians work effectively together to address these issues? Clearly, the answers to their questions will emerge only to the degree to which obesity is viewed as a serious public health problem and nutrition-related issues are placed at a higher level on both regional and national political agendas.

The Response of the Pan American Health Organization

44. World Health Day 2002 was dedicated to the theme of physical health, under the slogan "Move for Health." For this day, PAHO mobilized the countries of the Americas to increase awareness, educate, and encourage communities and individuals to promote physical activity. PAHO, in partnership with the CDC, also sponsored a highly successful Active Cities Contest to recognize selected cities throughout the Region for their efforts in promoting health by improving public spaces for safe recreation and promoting physical activity.

45. In May 2000, the Fifty-third World Health Assembly adopted Resolution WHA53.17 endorsing the WHO Global Strategy for the Prevention and Control of Noncommunicable Diseases. The strategy emphasized integrated prevention by targeting three main risk factors: tobacco, unhealthy diet, and physical inactivity. Two years later, the Health Assembly adopted Resolution WHA55.23 to develop a Global Strategy on Diet, Physical Activity, and Health. In response to these resolutions and in keeping with the effort to improve public health, PAHO is engaged in the process of organizing a broad and inclusive regional consultation to obtain stronger evidence for policy, increased advocacy for policy change, and stakeholder involvement, and a strategic framework for action. The regional consultation is scheduled to be held during 2003.

46. Both the World Health Day 2002 and the Global Strategy on Diet, Physical Activity, and Health provide significant momentum for advancing the agenda on the prevention and control of obesity.

Proposed Actions

Elements of a Multipronged Approach

47. To address this extensive problem of obesity, public health practitioners must consider the multiple facets of the issue:

- Public health resources for preventive programs;
- Emphasis on creating environmental conditions for behavioral change;
- Integration of public health areas of NCD and obesity prevention;
- New alliances and partnerships with key nonpublic health sectors; and
- More and better data to demonstrate that obesity is a problem at the state level.

Priority Actions

48. Priorities in promoting physical activity should include the following considerations:

- *Physical activity as an everyday lifestyle*. Among the population at large active living in everyday life, based primarily on walking and bicycle riding, should be promoted. The promotion of physical education and sports should be particularly stressed among children and adolescents;

- *An environmental and policy approach* to behavioral change. The most critical areas are those related to the physical environment of cities and the institutional approach at schools and worksites;

- *Development of sound programmatic approaches.* Very little research has been conducted so far to test cost-effective interventions[3]; and

- *The need for expanded partnership*. Key sectors are education, sports, transportation, local governments, and the private sector.

49. Priorities in promoting healthy eating should include the following considerations:

On the supply side:

- Partnerships with private industry to promote increased production of healthy fruits and vegetables;

- Promotion to increase the market supply of high-quality processed foods;

- Studies and subsequent appropriate action regarding the role of globalization and agro-business on food availability and consumption; and

- Similar studies to stimulate informed action regarding the role of marketing and advertising on food preferences of the population, especially children.

On the demand side:

- A stronger consumer voice through the provision of systematic information by consumer organizations;

- The creation of incentives for local food production better integrated to national plans;

- The promotion of healthy national food traditions;

- Mechanisms to stimulate additional needed research on food policy and nutrition; and

[3] Note that the key missing area of investigation, from an implementation view point, are effectiveness trials (interventions tested under real conditions) not efficacy trials (aimed at ascertaining health effects of interventions or treatments).

- Active participation in the Codex Alimentarius commission.

Action by the Subcommittee on Planning and Programming

50. The Subcommittee on Planning and Programming is asked to discuss the issues presented in this document and to consider the importance of Member States setting national priorities to address the problem of obesity within the following context:

- Overweight and obesity, along with physical inactivity and poor quality diets, are a serious public health threat in the Region;

- Governments should orient actions to make healthy choices the easiest choices for all through the promotion of healthy diets and active living as key preventive approaches;

- There is a need for an integrated nutritional approach and close coordination with NCD prevention/control efforts already underway;

- Applied and operational research should be encouraged in order to develop effective interventions to stimulate healthier eating and more active living; and

- The development of strategic, multisectoral alliances and partnerships interested in promoting the health, and well-being of the population is critical for increasing the issues profile and strengthening its place on political agendas.

51. The Subcommittee is also requested to provide guidance on the involvement of Member States in the process of the WHO Global Strategy on Diet, Physical Activity, and Health.

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