



The Impact of Globalization on the Prevalence of Obesity: Trends and Health Implications in Sub-Saharan Africa

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ABSTRACT

Currently, 500 million adults are obese worldwide of which an estimated 115 million reside in developing countries. For the first time in history, more of the world's population is obese and overweight than underweight, a pattern the World Health Organization (WHO) refers to as "globesity". These well documented patterns, previously found in developed and industrialized nations, are now commonplace throughout low to middle income countries of Asia, Africa, the Middle East, and Latin America. This paper identifies theories of population and social change (i.e., nutritional, demographic, and epidemiological transitions) that explain patterned increases in obesity relative to the stage of social change and technological development. Furthermore, we discuss the stage of national development, specifically the importance of national economic growth, as indicated by the gross domestic product, on overweight and obesity. We also examine trends and patterns in Sub-Saharan Africa and specifically South Africa to describe the multiple health challenges that developing nations might experience as climbing obesity rates effect chronic diseases (e.g., heart disease, diabetes, and cancer). The implications of these obesity-health-related relationships are discussed and practical recommendations are made. These recommendations relate to international healthcare and related policies that need to be implemented in these at-risk developing countries, especially those located in Sub-Saharan Africa.



INTRODUCTION

Whereas health concerns in developing nations previously focused on infectious disease, almost exclusively, recent patterns of globalization have given rise to a global obesity pandemic accompanied by increases in chronic diseases worldwide (Nishida et al., 2004 and Darnton-Hill et al., 2004). For the first time in history, more of the world's population is obese and overweight than underweight, a pattern the World Health Organization (WHO) refers to as "globesity" (WHO. Nutrition. Controlling the Obesity Epidemic.). Worldwide, 500 million adults or 10 percent of men and 14 percent of women are obese (defined as a body mass index, or BMI, of 30 or higher). In 2010, 43 million preschool children were overweight or obese. By 2030, 1 billion adults are projected to be obese (Harvard School of Public Health, Obesity Prevention, Source Web).

According to WHO 200 million people were obese in 1995 (WHO. Nutrition. Controlling the Obesity Epidemic). By 2000, nearly 300 million people were obese, globally (WHO. Nutrition. Controlling the Obesity Epidemic.). Currently, 115 million of the world's obese reside in developing countries. These well documented patterns previously found in developed and industrialized nations, are now commonplace throughout low to middle income countries of Asia, Africa, the Middle East, and Latin America (Prentice, 2006). Higher obesity rates are noted in developed Western Nations including the United States where 69% of the population is overweight or obese. Rates are rapidly increasing, however, among very poor countries such as regions in Sub-Saharan Africa. South Africa, in particular, has some of the highest rates of obesity in the region. In South Africa obesity presents amidst under-nutrition, famine, and various non-communicable diseases including malaria and HIV/AIDS.

While globalization has successfully contributed to the economic growth and to the reduction of famine of many low-income countries, increasing rates of obesity



threaten possible chronic disease epidemics along with infectious disease and pockets of starvation in already resource constrained countries (Prentice, 2005). According to the WHO report *Global Strategy on Diet, Physical Activity and Health*, several developing countries are already experiencing increases in cardiovascular disease, cancer, and kidney disease. According to Nugent (2008), forty-nine percent of deaths in the developing world are due to chronic diseases related to obesity. That exceeds the forty percent mortality rate from communicable disease and eleven percent mortality rate from injury.

POPULATION HEALTH AND SOCIAL CHANGE

Changes in population health are not withstanding advancements in social and economic development (Nugent, 2008). Increasing rates of obesity have prompted WHO to project increases in deaths and illness due to chronic diseases in low- and middle-income countries through 2030 (WHO. Nutrition. Controlling the Obesity Epidemic.). The transition from infectious disease to chronic diseases related to obesity may be explained by three inter-connected patterns. Together, the nutritional, epidemiological, and demographic transitions (see exhibit 1.) note the importance of social advancements and technology on the current obesity pandemic and related shifts in population health (i.e. mortality from infectious disease to chronic disease).

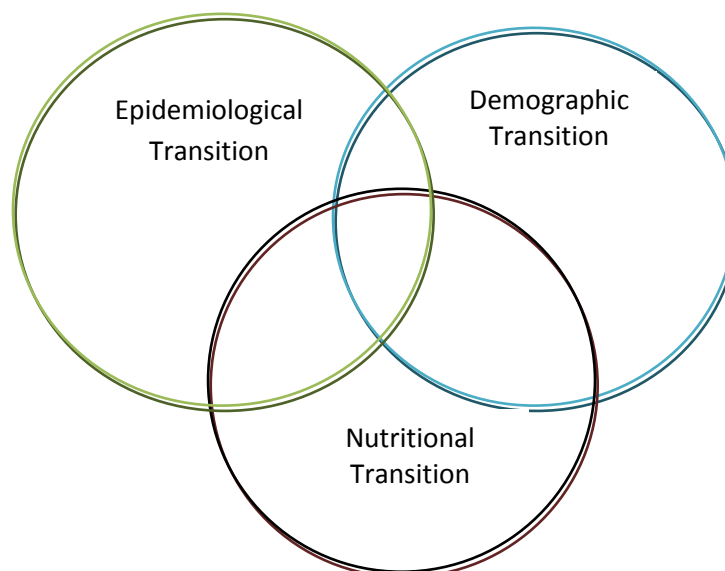


Exhibit 1. Paradigms of Population Health and Social Change



The nutritional transition considers the social-historical shift in how people have accessed food. Social transitions from hunter and gathering societies, to the domestication of animals, and dietary behavior change are noted. The nutrition transition also marks the shift from diets high in saturated fat, sugar, and refined foods that are low in fiber (the so called “Western” diet) to a healthier diet with less processed foods. The transition is observed by increasing rates of overweight and obesity (Popkin BM, 1994). Certain areas of the developing world experience the nutritional transition as rising rates of obesity with persistent underweight, related to famine and infectious disease (sometimes within the same household) (Popkin, BM and Gordon-Larsen, P., 2009; Nishida, C & Mucavale, P., 2009). The nutrition transition builds on the epidemiologic and demographic transitions.

The epidemiological transition describes the broad shift in mortality from infectious communicable disease to chronic non-communicable disease (Omran, 1969). Historically, reductions in infectious disease in the Western World coincided with medical and social advancements such as antibiotics and the sanitation movement. Whereas communicable disease was associated with malnutrition, famine, poor housing and environmental conditions, high prevalence rates of chronic and degenerative diseases followed the availability of mechanisms to process foods and shifts in labor production (Omran, 1969). Coinciding with the epidemiological transition, the demographic transition marks the simultaneous decrease in population mortality and fertility rates. Together, the epidemiological, demographic, and nutritional transitions suggest that obesity is an outcome of social and technological advancements that give rise to national development which differentially affects wealthy and poorer population groups across developed and developing nations (Nishidam C. & Mucavale, P., 2009).

OBESITY AND LEVEL OF NATIONAL DEVELOPMENT

Nugent (2008) suggests that the stages of social and economic development correlate with obesity prevalence rates across nations and for specific population groups. Patterns of globalization, specifically, contribute to the economic growth of many low-income to middle income countries by improving access to food supplies in



regions of the world previously affected by famine. Today, more of the world's people have access to Western markets and to global food supply. Furthermore, Western Society has had a major affect on the cultures and lifestyles around the world and especially the diets and eating patterns of developing nations.

National economic development also determines the respective transition (epidemiologic, nutritional, and demographic) for a given nation (Popkin, BM & Gordan-Larsen, P., 2009). Findings from the literature suggest several patterns in obesity across a country's stage of economic growth. ***First, rates of obesity in developed countries are higher than for developing countries, in general, and particularly among poorer racial and ethnic populations in the developed world.*** Despite high rates of obesity in wealthy nations, the greatest burden of obesity is among poorer populations with declining rates among the wealthy. In developed countries, such as the U.S. and Canada, the poor demonstrate greater obesity rates than higher income and more educated groups (Harvard School of Public Health. Obesity Prevention Source Web). In China and Brazil, for example, population obesity trends mirror the U.S. with declining rates among the wealthy and increases in the poor (Harvard School of Public Health. Obesity Prevention Source Web). In China, the number of overweight increased from less than 10 percent to 15 percent within a three year period. In Brazil and Colombia around 40 percent of the population is currently obese (Harvard School of Public Health. Obesity Prevention Source Web).

Additionally, racial-ethnic groups fare worse in wealthier developed nations. In developed nations, racial ethnic minorities are disproportionately affected by high obesity prevalence. In the United States, for example, African American/ Black women are most adversely affected by obesity, nearly 59 percent, followed by Mexican American women (44%), and Hispanic women (41%). Obesity rates have continued to escalate among racial ethnic populations and especially women. Canadian surveys found Aboriginal groups were affected by obesity at 25 percent compared to 17 percent in non-Aboriginal groups (Harvard School of Public Health. Obesity Prevention Source Web).



Mid-level countries show declining rates among the wealthy and slow increases among the poor. Middle-income countries, following the pattern of more developed countries, are seeing the transition from the wealthy to the poor. Current obesity rates in Central and South America mirror the United States and Canada (Finucane et al., 2011). In 2008, greater than 30% of women in Central and South American were obese. Evidence suggests that Mexico and other countries in Central and South America are already seeing the burden of obesity shift from the wealthy to the poor. Mexico, like other middle to poorer nations, demonstrates slightly greater obesity rates among wealthier groups than poorer groups. Specifically, 70% of Mexican adults are overweight and obese. Also, women are more adversely affected by obesity in Central and South America. According to Finucane (2011), 25% of Southern Latin American women and 20% of men in Central America are obese. In Brazil, rates shifted from the poor to the wealthy between 1975 and 2003. However, current rates across class show little variance and the differences among women are slight.

Further, rates of obesity are growing at a faster rate among developing nations where middle income to wealthy populations are mostly affected. The exceedingly fast growth in obesity among developing nations demands global attention. Whereas wealthier populations in the developing world currently experience more of the burden of obesity (Prentice, 2006), findings also suggest famine among pockets of obesity in these nations. A 1999 United Nations study found obesity growing rapidly in all developing nations, even in countries where hunger exists (Subramanian et al., 2011). Even sub-Saharan Africa, where most of the world's hungry live, is seeing an increase in obesity, especially among urban women. In all regions, obesity seems to grow as income increases (Nugent, 2008). Parts of South and South East Asia affected by poverty and famine have some of the lowest BMIs in the world. Bangladesh had some of the lowest BMIs, less 21 in 2008 (Subramanian et al., 2011). Still, in these regions, where malnutrition is a major concern, nations such as Cambodia, China, India, Nepal, and Vietnam, have demonstrated obesity prevalence rates nearing 38.5 percent ().

Finally, findings from the literature suggest **there is a correlation between level of national development (i.e. GDP or GNP) and mortality and morbidity from**



chronic diseases related to obesity (Subramanian et al., 2011). These differences are marked by economic inequities. While lower national socioeconomic status, as indicated by GDP, is protective against obesity in developing nations, it can either reduce or increase obesity in lower-middle income countries and is a risk factor for obesity in upper to middle income developing nations.

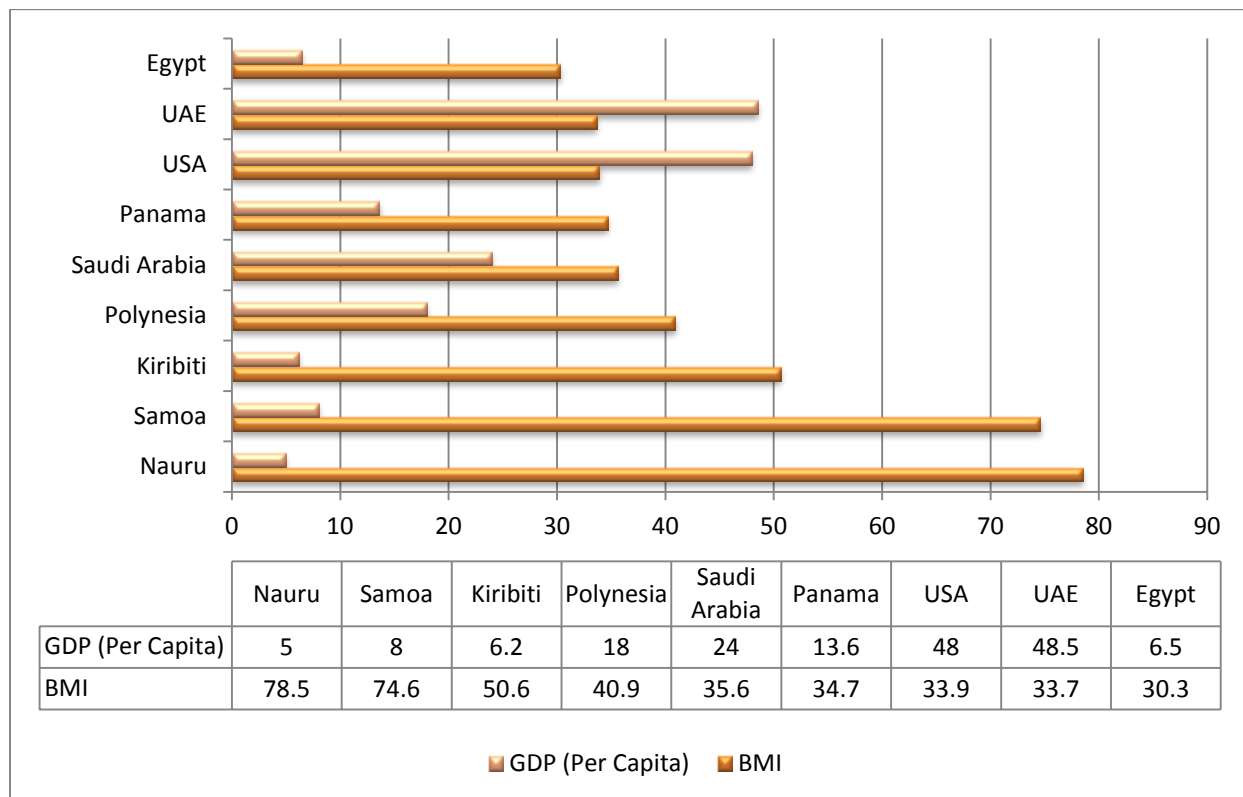


Table 1. Ten Nations with the Highest Rates of BMI

Source: World Health Organization (WHO), "Global Database on Body Mass Index: Tables," apps.who.int/bmi/index.jsp (accessed May 11, 2012).



Above, Table 1 highlights the nations with the highest rates of obesity by gross domestic product (per capita). The table illustrates higher rates of obesity in nations with higher gross domestic products. The exception is the Pacific Island Nations of Nauru (78.5%), American Samoa (74.6%) and Kiribiti (50.6%) which demonstrate some of the highest rates of obesity worldwide. The United States and the United Arab Emirates have some of the highest gross domestic products worldwide yet rates of obesity are a bit lower than for the Pacific Island Nations. The pattern of national income and obesity has been explained in the research of Suhrcke *et al.* *Accordingly, the average BMI appears to increase as gross domestic product (GDP) per capita rises, suggesting a positive relationship between BMI and income, up to a relatively high level of income per capita (\$22,000 per year). Beyond about \$22,000 BMI drops with increasing income.*

SUB-SAHARAN AFRICA

Sub-Saharan Africa has some of the poorest nations in the world. Countries including South Africa and Gambia which have historically faced under-nutrition along with a litany of communicable diseases are facing rising obesity at alarming rates (Dalal, et al. 2011). As in other developing regions, nationally representative studies of obesity in sub-Saharan Africa are scarce. Available studies, suggests wide variation in obesity rates by country. 2008 data, demonstrated an average BMI of 19.9 among men in the Democratic Republic of the Congo, some of the lowest rates of obesity in the world compared to South Africa, some of the highest. A 2009 BMC Public Health study showed the average BMI among women in Sub-Saharan Africa was nearly 31.4% (Subramanian et al., 2011; Dalal et al., 2011). Higher rates were identified in Kenya (38%), Ghana (35%), and South Africa (61%). Still, literature on the global epidemic in South Africa is more evolved than other regions (Twei et al., 2010). There are four core themes to consider in the obesity epidemic in South Africa: globalization and urbanization; pre-existing health factors; emergent health issues, and starvation vs. obesity.

Globalization and Urbanization. Patterns of globalization which contributed to the economic growth of many low-income to middle income countries, as previously



discussed, also improved access to food supplies in regions of the world previously inundated by hunger and famine. Related to globalization is the pattern of urbanization (Tuei et al., 2009). Rising obesity in Sub-Saharan Africa, as for other regions of the world, is credited to physical inactivity related to changing labor supply, the demographic transition and corresponding population ageing, nutrition transitions including the rapid adaptation of Westernized diets and the availability of fast food, and socioeconomic changes. Location (urban vs. rural), gender, and income continue to fuel inequities in Sub-Saharan Africa (Tuei et al., 2009). The poor in urban settings are facing a greater burden than wealthier groups or among rural populations.

Pre-existing Health Factors. In Sub-Saharan Africa, problems of obesity and related disease, due to globalization and specifically Westernized diet and behaviors, are occurring simultaneously with persistent poverty, malaria, tuberculosis, and HIV/AIDS. Rising obesity has instigated multiple burdens in these developing nations (Dalal et al., 2011; Motala et al, 2009). AIDS related wasting syndrome also complicates the observed rates of obesity in South Africa (Stuckler, 2008). Wasting syndrome which results in a reduction of 10% of body weight may mask the extent of obesity prevalence in regions severely affected by HIV such as South Africa. It is also suggested that a higher ratio of overweight to underweight, than what is currently observed, would occur if not for the HIV/AIDS epidemic (Tuei et al., 2010).

Emergent Health Issues. According to Motala et al. (2009), the prevalence of type II diabetes is growing rapidly in Sub-Saharan Africa. It is projected that by 2025, there will be an 80% increase in obesity prevalence from 10.4 million (in 2007) to 18.7 million. Pre-diabetic conditions and other metabolic dysfunctions including beta-cell dysfunction, insulin resistance, and micro-vascular complications have also been noted. Studies of Sub-Saharan Africa have revealed increases in stroke (0.3%); diabetes mellitus from (16%); hypertension (48%); obesity (43%) and smoking (71%). Table 2, below shows the mortality rate for chronic diseases in South Africa related to obesity.

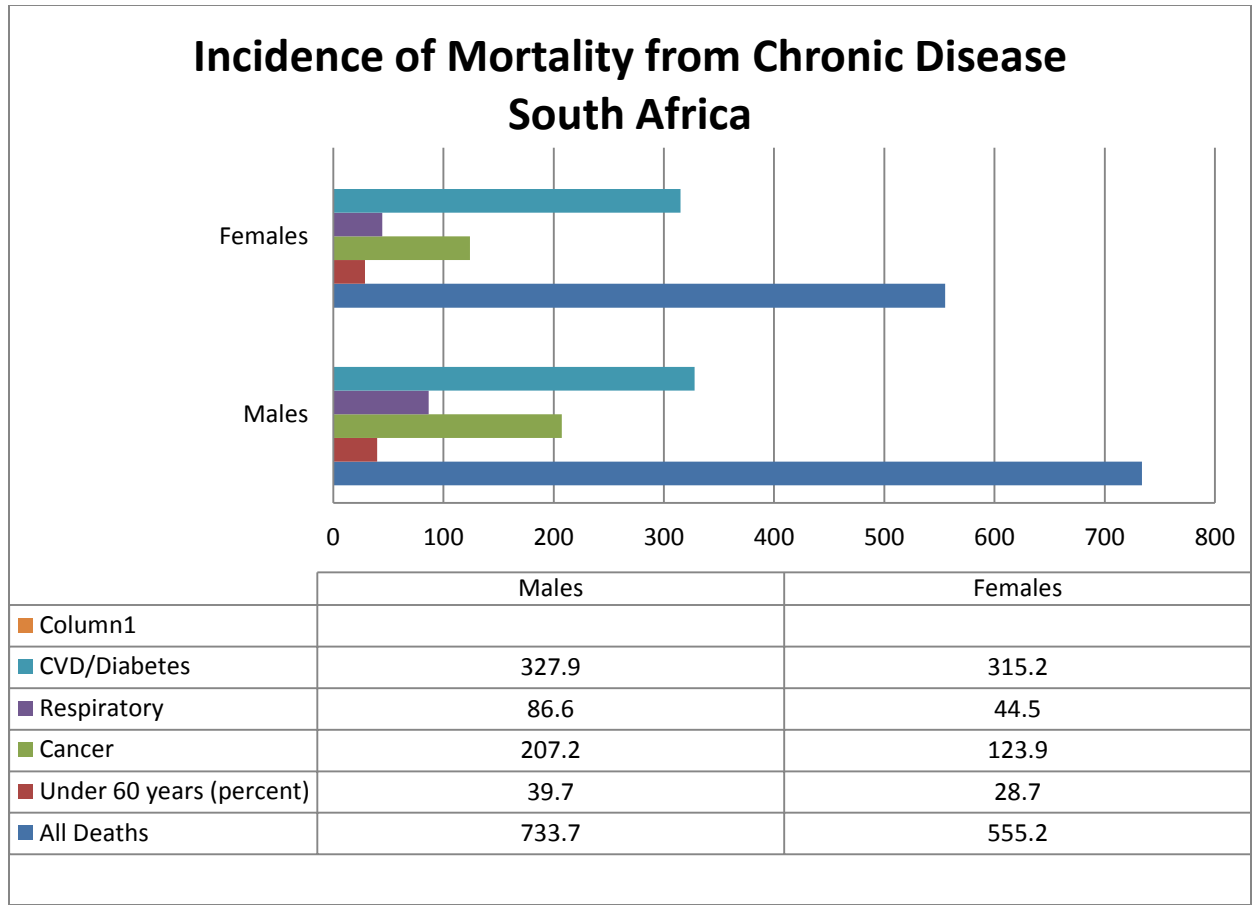


Table 2. Incidence of Mortality from Chronic Disease in South Africa

Source: World Health Organization (WHO), "Global Database on Body Mass Index: Tables," apps.who.int/bmi/index.jsp (accessed July 22, 2011)

The table highlights the growing importance of cardiovascular disease, diabetes, and chronic disease in South Africa. These chronic health issues, formerly viewed as diseases of old age, are now important health concerns in developing nations. In both men and women, CVD, Cancer, and diabetes account for more than 50% of chronic disease mortalities in South Africa.

Starvation vs. Obesity. Research from the South Africa has pointed to the occurrence of obesity and hunger in the same village or even, at times, in the same household (Tuei et al., 2010). As in the United States a challenges in addressing overweight and obesity in South Africa is the consumption of fast foods. Particularly, the



consumption of fast is a status symbol as is the appearance of overweight (Tuei, 2009). Due to high rates of HIV/AIDS in South Africa, thinness carries negative stigma– to mean that you are HIV positive. Excessive weight is also thought to be benign meaning the immediate detriments to health are not considered nor are the long-term effects (Tuei, 2009).

POLICY IMPLICATIONS

Rising obesity will instigate multiple burdens in developing nations just as it is changing and shaping the burden of disease in South Africa. Several developing countries are already experiencing increases in cardiovascular disease, cancer, and kidney disease. It is urgent that international policies address rising obesity to prevent avoidable population deaths (Dalal, et al., 2011). Global health policies might consider the following: (1) **Promote traditional diets.** Globalization has made access to more food and specifically the Western diet to more people. Although, globalization has reduced world hunger, micro-nutrient deficiency, remains a problem in populations that face rising obesity and underweight. (2) **Allocate resources to fight hunger and under-nutrition.** Despite rising obesity, hunger and famine are still concerns in developing nations. Global solutions to fight hunger should consider improvements to diet quality to correct micronutrient deficiencies experienced in both obesity and under-nutrition. (3) **Develop the healthcare infrastructure of developing nations.** Increasing obesity rates across World populations has the capacity to drain the medical systems of nations torn by HIV/AIDS, malaria, and other communicable disease. Strategies are needed to develop the medical systems to increase the capacity to treat chronic health issues. Further, the technology and life extending medications that exist in the United States may not be readily available in these nations to extend the lives of those living with chronic disease. This has implications for decreasing the human capital of developing nations by reducing the middle aged workforce. (4) **Recommend culturally competent models.** Lastly, culturally competent approaches and models that are employed to address the obesity epidemic must be respectful of cultural aesthetics related to body size (i.e. preference for a fuller body frame), health, and beauty standards that differ from Western aesthetics and preferences for thinness.



Approaches should focus on healthy eating, physical activity, and the physiological damage of excessive weight rather than beauty ideals and status.

CONCLUSION

The global obesity pandemic, perhaps, has greatest implications for developing nations. Not only are obesity rates growing faster in developing nations, these world regions are not prepared to address the health effects of chronic disease brought on by an overweight and obese population. The increasing rates of obesity among developing nations calls for strong action to prevent obesity and reduce current rates. Lessons from developed nations suggest that the economic and health impacts of obesity are extremely costly. However preventative mechanisms, including programs to enhance healthy and micro-nutrient diets and opportunities for exercise which target multiple sectors of the population can help to reduce the impacts of a growing obesity epidemic. Further, national governments can help people to make healthier lifestyle options by making healthier foods and opportunities for physical activity accessible and affordable. Educating the public on the long terms health effects of obesity is critical. Educational efforts should also encompass nutritional information including recommended daily fat and caloric intake. Further, as Western diets become more available, it is important that global food chains reveal dietary information to uninformed consumers to increase better decision-making. Also, nations might monitor advertising to vulnerable population groups, including youth to support the prevention and elimination of obesity. However, to consider the multiple challenges and varied cultural beliefs of nations, such models must be cultural competent, and reflect the needs of specific populations.

REFERENCES

Dalal S, Beunza JJ, Volmink J, et al. Non-communicable diseases in sub-Saharan Africa: what we know now. *Int J Epidemiol* 2011;40:885-901.

Darnton-Hill I., Nishida C, James WPT. A life course approach to diet, nutrition and the prevention of chronic diseases. *Public Health Nutrition* 2004 ; 7(1A): 101–121.

Elinder LS, Jansson M. Obesogenic environments – aspects on measurement and Indicators. *Public Health Nutrition* 2008, 12(3): 307–315.



Finucane MM, Stevens, Gretchen A, Cowan, MJ, Goodarz D, Lin JK, Paciorek, CJ, Singh, MG, g PhD c, Gutierrez H, Lu Y, Bahalim A, Farzadfar F, Riley LM, Ezzati M. National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants. *The Lancet* 2011, 377(9765): 557 – 567.

Harvard School of Public Health. Obesity Prevention Source Web. Adult Obesity. <http://www.hsph.harvard.edu/obesity-prevention-source/index.html>

Motala, A A., Mbanya, JC, Ramaiya, K L. Metabolic Syndrome in Sub-Saharan Africa. *Ethnic Dis* 2009, 19(2 Suppl 2):S2-8-10.

Nishida C, Mucavale P. Problem of overweight and obesity: the WHO global database on body mass index. *SCN News* 2004; 29:5–12.

Nugent. R. Chronic Diseases in Developing Countries Health and Economic Burdens. *Ann. N.Y. Acad. Sci.* 2008; 1136: 70–79.

Omran AR. The Epidemiologic Transition: A Theory of the Epidemiology of Population Change in Sauvy, A. 1969. *General Theory of Population*. New York: Basic Books, Inc.

Popkin, BM. The Nutrition Transition in Low-Income Countries: An Emerging Crisis. *Nutrition Reviews* 1994, 52(9): 285-298

Popkin, BM. Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. *Am J Clin Nutr* 2006;84:289–98.

Popkin, BM, Gordon-Larsen, P. The nutrition transition: worldwide obesity dynamics and their determinants. *International Journal of Obesity* 2004; 28: S2–S9

Popkin BM. The shift in stages of the nutrition transition in the developing world differs from past experiences. *Public Health Nutr* 2002; 5: 205–214.

Prentice AM, Moore SE. Early programming of adult diseases in resource poor countries. *Arch Dis Child* 2005;90:429–32.

Stuckler, D. Population Causes and Consequences of Leading Chronic Diseases: A Comparative Analysis of Prevailing Explanations *The Milbank Quarterly* 2008; 86(2): 273–326).

Subramanian SV, Perkins JM, Özaltin E, Davey Smith G. *Weight of nations: a socioeconomic analysis of women in low- to middle-income countries*. *Am J Clin Nutr* 2011;93:413–21.

Suhrcke M, Stuckler D, Suk JE, Desai M, Senek M, et al. (2011) The Impact of Economic Crises on Communicable Disease Transmission and Control: A Systematic Review of the Evidence. *PLoS ONE* 6(6):e20724

Tuei VC, Maiyoh GK, Ha CE. Type 2 diabetes mellitus and obesity in sub-Saharan Africa. *Diabetes Metab Res Rev* 2010 Sep;26(6):433-45.

World Health Organization, Nutrition. Controlling the Obesity Epidemic. <http://www.who.int/nutrition/topics/obesity/en/>

World Health Organization. Global Strategy on Diet, Physical Activity and Health. Diet and Physical Activity: A Public Health Priority. <http://www.who.int/dietphysicalactivity/en/>



Ziraba AK, Fotso JC, Ochako R. Overweight and obesity in urban Africa: A problem of the rich or the poor? BMC Public Health 2009;9:465.