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## Strategies for Preventing and Managing Overweight and Obesity

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**Abstract:** The purpose of this study was to reveal the various strategies for preventing and managing overweight and obesity in relation to reducing morbidity and mortality due to overweight and obesity. Thus, overweight and obesity are defined as Body Mass Index (BMI) of 25.0-29.9 kg/m<sup>2</sup> and  $\geq 30.0$  kg/m<sup>2</sup> respectively. Overweight and obesity are complex multifactorial chronic diseases that develop from an interaction of genotype and the environment. It was therefore concluded that overweight and obesity involve the interaction of social, behavioural, cultural, physiological, metabolic and genetic factors. Thus, it was recommended that multi-component intervention which include nutrition and physical activities and strategies such as providing nutrition education or dietary prescription, physical activity, pharmacological and behavioural skills development and training could help to prevent and manage overweight and obesity.

**Key words:** Strategies, preventing, managing, overweight and obesity

### INTRODUCTION

Reducing morbidity and mortality in relation to overweight and obesity is a public health priority. It is on this premise that the World Health Organization (WHO) (2002) defined overweight as a Body Mass Index (BMI) equal to or more than 25 kg/m<sup>2</sup> and obesity as a Body Mass Index (BMI) equal to or more than 30 kg/m<sup>2</sup>. Corbin and Lindsay (1998) asserted that overweight and obesity are associated with various organic impairments, shortening of life, psychological maladjustment, poor relationship with peers (especially among children), awkward physical movement and lack of achievement in athletic activities.

Thus, overweight and obesity are multifactorial chronic diseases that develop from an interaction of genotype and the environment (Dietz and Gortmaker, 2001). They emphasized that overweight and obesity involve the integration of social, behavioural, cultural, physiological, metabolic and genetic factors. Hence both result from an imbalance between the amount of energy consumed and the amount expended.

However, WHO (2002) indicated that multi-component intervention that include nutrition and strategies such as providing nutrition education or dietary prescription; physical activity prescription or group activity; behavioural skills development, training and the combination of two or more interventions could prevent and manage overweight and obesity. Therefore the thrust of this paper is to reveal the various strategies for preventing and managing overweight and obesity in relation to health promotion and chronic diseases prevention and control and in reducing morbidity and mortality associated with overweight and obesity.

**Causes of overweight and obesity:** According to World Health Organization (2002), the fundamental cause of

overweight and obesity is an energy imbalance between calories consumed on one hand and the calories expended on the other hand. WHO stressed that global increase in overweight and obesity are attributed to a number of factors and they are:

- A global shift in diet towards increased intake of energy dense food that are high in fat and sugar but low in vitamins, minerals and other micro nutrients.
- A trend towards decreased physical activity due to the increasing sedentary nature of many forms of work, changing mode of transportation and increasing urbanization.
- Insulin resistance (a condition where the body does not respond to pancreatic hormone insulin)
- Hypothyroidism (slow metabolism)
- Genetic factors
- Chronic stress (which leads to overactive adrenal glands) and
- Medication, weight gain can be produced by many medications especially steroid hormones, some antidepressants, some tranquilizers and some anti-psychotic drugs

**Health Consequences of Overweight and Obesity:** The health consequences of overweight and obesity are many and varied, ranging from an increased risk of premature death to several non fatal but debilitating and psychological complaints that can have an adverse effect on quality of life (Lean, 2000). Lean emphasized that the major health problems associated with overweight and obesity are:

- Type 2 diabetes.
- Cardiovascular diseases and hypertension.
- Respiratory diseases (sleep apnea).

- Osteoarthritis (muscular-skeletal disorder).
- Psychological problems (depression, guilt, anxiety and low self esteem).
- Alteration in the quality of life.
- Increased levels of cholesterol and other blood fats (Lipoprotein and triglycerides).
- Increased early deaths.

**Strategies for preventing and managing overweight and obesity:**

Overweight and obesity, as well as their related chronic diseases are largely preventable and manageable. Therefore the World Health Association (1998); National Institute for Health (1998); United States Department of Health and Human Services (2002); World Health Organization (2002) and American College of Sports Medicine (2001) released a report on preventing and managing the global epidemic of overweight and obesity which involve the following strategies:

- Physical activity intervention.
- Lifestyle intervention.
- Dietary intervention.
- Pharmacological intervention.
- Workplace intervention.
- Multi-component intervention.

**Physical activity intervention:** Physical activity provides protection against the health risks of obesity and overweight primarily by reducing or reversing the development of a progressive disease process known as insulin-resistance syndrome or syndrome X. This syndrome is closely associated with obesity and is characterized by the clustering of insulin resistance and hyperinsulinemia, dyslipidemia essential hypertension, glucose intolerance and an increased risk of non-insulin dependent diabetes mellitus and cardiovascular disease (Landberg, 1996; Opara and Levine, 1997; Timar *et al.*, 2000). Before describing the moderating influence of physical activities, the general mechanisms underlying insulin resistance syndrome will first be described.

While research is still accumulating on the specific mechanisms, the general disease process is related to the presence of abdominal body fat particularly visceral fat (Despres, 1993, Chisholm *et al.*, 1997). Abdominal body fat is characterized by an increased responsiveness to lipoprotein lipase. Because of its high lipolytic activity abdominal adipocytes readily release Free Fatty Acids (FFA) into the circulation. These FFA are carried directly to the liver through the portal circulation where they are converted into Very Low Density Lipoproteins (VLDL) and ultimately LDL cholesterol. The high level of FFA may also lead to enhanced lipid oxidation and reduced glucose oxidation. These changes can result sensitivity to insulin. The

increased levels of FFA in the portal circulation also act directly to inhibit insulin clearance by the liver resulting in hyperinsulinemia. High levels of insulin in the presence of elevated glucose tend to promote reduction in insulin sensitivity and hasten the development of non-insulin dependent diabetes mellitus. The increased insulin levels are also associated with increases in blood pressures as insulin is thought to increase sodium retention in the kidney. Thus, high level of abdominal obesity are directly related to dyslipidemia (elevated levels of LDF and triglycerodes), hypertension, hyperinsulinemia, reduced glucose sensitivity and ultimately non-insulin dependent diabetes mellitus.

Physical activity reduces beneficial metabolic changes that limit the progression of this underlying disease process. The major benefit of physical activity is that it leads to specific reduction in the levels of abdominal obesity (Ross and Janssen, 1999). The enhanced lipolytic activities of these fat cells allow fatty acids to be released and metabolized more readily than fat depots. While overall weight loss from exercise is limited, studies have indicated that changes in abdominal fat levels can occur without corresponding weight loss or totals fat loss. Studies have also demonstrated that physical activity has a direct effect on improving overall metabolic profiles (e.g normalization of insulin levels and improved glucose homeostasis). In a review of Kelly and Goodpaster (1999) studies, the improvement in insulin action were found to occur without concomitant changes in weight or body composition while there appear to be some chronic adaptations that occur as a result or regular exercise performed over a period of time, there are also observations that indicate that some benefits are related to the acute effects following individual bouts of activity.

**Lifestyle intervention:** Lifestyle intervention include changes in diet, physical activity (or sedentary activity), behaviour therapy to help make those changes or any combination of the above that could help to prevent or manage overweight and obesity (National Institute of Health, 1998). National Institute of Health remarked that lifestyle intervention strategies helps in health promotion; chronic disease prevention and control especially for poor disadvantages populations, prevent premature deaths and avoidable disability due to major chronic disease

**Dietary intervention:** Good nutrition can help to lower people's risk for many chronic disease including heart disease, stroke, some cancers, diabetes and osteoporosis (United States Department of Health and Human Services, 2002). However, a large gap exists between healthy dietary patterns and what people actually eat. Thus, good nutrition begins in infancy. Hence children who were not breastfed are at increased

risk for overweight, asthma, obesity and some childhood infections (WHO, 2002). Therefore, the strategic objectives of World Health Organization are to promote healthy diets and improve the nutritional status of the population throughout the life course, particularly among the vulnerable group in relation to addressing double burden of nutrition related ill health and to contribute to the achievement of the Millennium Development Goals (MDGs). WHO therefore recommended a dietary prescription of low-fat diets of 20-30 g of fat per day or less than 20% categories from fat and low-carbohydrate diet of < 20 g of carbohydrates per day with a mean calorie content of 1446 kcal/day. From the foregoing, dietary intervention is to promote diets that are low in fat, high in complex carbohydrate which contain large amount of fresh fruits and vegetables in related nutrition education, specific dietary guidelines, use of a food diary and instruction about a particular diet to prevent and manage overweight and obesity

**Pharmacological intervention:** Medications are the ones approved by the National Agency for Food Drug Administration and Control (NAFDAC) for use in obesity, including both prescription and over the counter drugs or medications approved for other non-obesity indications that may have efficiency for weight loss (WHO, 2004). WHO remarked that medication such as Subutramine, orlistat, phentermine and mazindol which come from the shells of crabs, lobster, shrimps and other shell fish appear to have efficiency of 3-5 kg of weight loss and with no side effects.

**Workplace intervention:** In preventing worksite health, the workplace strategy intervention is to enhance health promotion programmes at federal and state agencies in Labour-saving. Planning information, policy examples, step to step tool kits, information about stairwell and garden marked programmes and other resources to help develop wellness programmes that foster health or lifestyles among employees ([http:// www.cdc.gov/hwi](http://www.cdc.gov/hwi)). Therefore this intervention is to help in weight management as it relates to the use of product of automation in workplace, on work exercise (leisure) facilities or the use of self help resources.

**Multi-component intervention:** According to WHO (2002), the multi-component interventions in preventing and managing overweight and obesity include various combinations of nutrition education, specific dietary intervention prescription, aerobic and strength training prescription, behavioural techniques for skill development group support and counseling, financial incentives, on site exercise facilities or use of self-help resources. Thus, less common intervention components incorporated into successful programmes included general health education and health risk

assessment, explicit focus on overall life-style change use of national software for education or self monitoring group exercise and home based exercise

**Conclusion and Recommendations:** Overweight and obesity defined as a Body Mass Index (BMI) of 25.0-29.9 kg/m<sup>2</sup> and ≥30.0 kg/m<sup>2</sup> respectively are complex multi-factorial chronic diseases that develop from an interaction of social, behavioural, cultural, physiological, metabolic and genetic factors. Therefore, overweight and obesity were seen as associated with type 2 diabetes; cardiovascular diseases and hypertension, respiratory diseases; some cancers; osteoarthritis; psychological problems and alteration of the quality of life. Thus, physical activity, dietary manipulations, lifestyle changes, workplace leisure and recreation, pharmacological and multi-component interventions were seen as strategies that could help prevent and manage overweight and obesity and their related diseases.

Promoting healthy diet, increased level of physical activity and other intervention to control overweight and obesity must involve the active participation of many groups including government, health professionals and food industry, the media and consumers. Their shared responsibility is to help promote healthy diets that are low in fat, high in complex carbohydrates and large amount of fruits and vegetables. Thus greater emphasis on improved opportunities for physical activity is clearly needed especially with increased urbanization and the parallel increase in time devoted to sedentary pursuits. It is therefore recommended that intervention strategies should be geared towards

- Developing a plan of targeting nutritional supplements that will support weight loss through horizontal balancing and metabolism support
- Developing and helping to incorporate an exercise plan that is right for fitness level and lifestyle
- Supporting to make dietary changes through detailed supportive dietary counseling
- Helping to develop a dietary plan that balances insulin levels, supports metabolism and decrease food cravings.

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