Importance of nutrition education in treating and preventing obesity in minority populations in the United States

KEYWORDS: Childhood obesity, minorities, nutrition education, chronic disorders.

Abstract
Childhood obesity eventually leads to predisposition to excess weight gain and obesity later in adult life. Overweight children are at twice the risk of becoming overweight/obese adults as compared to their lean counterparts. While obesity is a multifaceted health disorder, primary causes, especially in children stem from consumption of excess calories, mainly processed foods high in sugars, fats, and sodium. Additionally, reduced consumption of fruits and vegetables coupled with lack of physical activity combined with long periods of time spent performing sedentary activities such as, watching television/electronic media (tv), all of which contribute to development of obesity and related chronic disorders.

While the need for nutrition education is critical in today’s obesogenic environment, few educational institutes offer nutrition education as part of the regular curriculum. Therefore, the aim of this review is to examine the importance of nutrition education and its role in reducing obesity and other health disparities, especially in minority youth population.

METHODS
An extensive search for relevant articles was performed on PubMed and Medline search engines. Systematic reviews, meta-analyses, policies, brief reports, and clinical studies were used to compile this manuscript. To identify relevant studies to be included for this manuscript, search results were carefully reviewed and summarized. Key words used to find suitable studies were included but not limited to nutrition education, obesity, obesity in minority children, childhood obesity, and metabolic syndrome in children with obesity, and nutrition education in minority obese children.

INTRODUCTION
According to the world health organization (WHO), school-aged children and youth aged 5-19 years with body weights greater than 85th percentile are considered overweight, while those with body weights at or above 97th percentile are deemed obese. By the same token, younger children between ages of 2-5 years over the 97th percentile are to be considered overweight and at or above 99th percentile to be considered obese. Clinical studies have indicated that childhood obesity will eventually lead to early predisposition to excess weight gain and obesity later in adult life (1, 2). One of the most concerning complications associated with the pediatric population is the development of adult-onset diabetes, also known as type 2 diabetes. Obesity related chronic disorders such as type 2 diabetes generally are accompanied with insulin resistance. Insulin resistance in childhood is predictive of insulin resistance in adulthood. Such insulin resistance further enhances atherogenicity and other cardiovascular abnormalities in obese children, thus suggesting a direct link between adiposity and development of inflammatory chronic diseases in a pediatric population (2). It has been predicted that obesity in children is on the rise and that, in turn, intensifies the urge and need to find both treatment and prevention programs and multifaceted approaches to treat these life threatening conditions related to obesity in the pediatric population. It is this association of health impairments with obesity that calls for obesity being termed as a disease both in adult and pediatric populations (1).

A recent clinical review suggested that overweight children were at twice the risk of becoming overweight/obese adults as compared to their lean counterparts (1, 3). While obesity is a multifaceted health disorder, primary causes, especially in children stem from consumption of excess calories, mainly processed foods high in sugars, fats, and sodium content. Additionally, reduced consumption of fruits and vegetables coupled with lack of physical activity and long periods of time spent performing sedentary activities such as, watching television (TV), use of computers, tablets, smart
In recent study, it was reported that just a 1 kg/m² increase in BMI in children between the ages of 7 to 18 years old, risk for coronary heart diseases increased by almost 5%. It has been predicted that cardiovascular disease (CVD) outcome, especially in children is related and dependent on the obesity patterns throughout the life cycle. If obesity is not corrected during childhood years, the risk for developing CVD remains consistently higher through adult life. Similarly, the health risks associated with obesity in children is not just limited to CVD, atherosclerosis is a progressive inflammatory condition that begins in childhood with development of an atheroma which may or may not be visible at early stages, and they may become more apparent with age. Such atheromas may transform into larger plaques resulting in coronary artery diseases and myocardial diseases. This atherosclerotic process is due to the presence of obesity resulting from poor nutrition choices and sedentary lifestyle (6). Furthermore, childhood obesity can result in other health conditions such as hypertension, dyslipidemia, other form of cardiovascular diseases all of which result from development of metabolic syndrome, a cluster of inflammatory responses resulting from presence of excess body fat (6). Also, studies have shown that presence of metabolic syndrome and related cluster of inflammatory conditions would also result in development of type 2 diabetes. Such inflammatory processes are ultimately associated with biochemical, functional, and anatomical changes, especially seen in children as young as 10 years of age. There are strong clinical evidences to show that the inflammation accompanying obesity results in higher concentrations of leukocytes and other biomarkers linked to increased body fat, especially abdominal and hepatic fat, both of which would ultimately result in cardiovascular diseases in a pediatric population (6). Recent studies have indicated that prevalence metabolic syndrome in children increased proportionally to increases in body fat. Obese children (31%) presented with higher incidences of metabolic syndrome than their lean counterparts (10.4%) (7, 8). While studies have shown that lifestyle habits involving exercise and food choices begin in childhood years, they tend to stabilize between the ages of 11 and 12 (1). However, not much clinical research is available to determine long-term changes that establish efficacy of such interventions introduced at young ages. There is also a crucial need to evaluate the many treatment options available for obesity, but more so, the lack of clinical approaches in the pediatric population warrants the need for multidimensional programs that can target the under-served minority populations that seem to be affected by weight related health complications the most. Obesity treatment programs that encompass both the clinical and community efforts to target obese children, their families, and care takers is crucial to developing innovative strategies to stunt early morbidity and mortality both in the United States and globally. Studies have documented that a lack of physical activity coupled with at least two hours of television exposure is associated with increased BMI and detrimental changes in body composition in the pediatric population. Furthermore, a poor diet coupled with lack of physical activity can result in low self-esteem, low levels of academic performance, social changes, and behavioral changes amongst children (1). Dietary choices in early childhood years are critical considering such patterns of food choices and lifestyle habits are mostly learned, ingrained, and rooted during early childhood. The expectation and reality for this age group is that most of their food and lifestyle choices are being determined by their parents or caretakers; therefore, designing a treatment program just targeting the pediatric population without including their families and caretakers seems like a complex process, since success of treatment would largely depend on a wholistic approach. A scientifically sound treatment and prevention program to reduce obesity and related health disparities in the pediatric population must be inclusive of dietary interventions mainly, extensive nutrition education, not just limited to providing appropriate food choices, but a de-rooting of preexisting dietary and lifestyle habits and uprooting of sound nutrition principles that will allow both the children and respective caretakers to leave the program armed with knowledge to assist with maintenance post treatment.

Importance of nutrition education

Contributing factors of obesity include genetics, sedentary lifestyle, consumption of energy-dense and high fat foods, and resistance to adopting a healthier lifestyle due to certain beliefs and misconceptions; therefore, a multi-factorial approach to reducing obesity is more effective than exercise alone (9-11). Nutrition education is an essential component of a successful wellness program; numerous studies have shown improvements in nutrition and weight loss outcomes in children and adolescents after receiving nutrition education (9, 10, 12-14). Nutrition education is especially vital for children and adolescents: 80% of children who are obese by the time they reach the eighth grade will remain obese into adulthood (15, 16).

When used as part of a comprehensive wellness strategy, group-based nutrition education is an effective tool for reducing obesity and promoting a healthier lifestyle. A one-year lifestyle intervention program conducted by Pedrosa and colleagues found that nutrition education and exercise counseling significantly reduced waist circumference and BMI, improved lipid profile by increasing HDL-cholesterol, reduced blood pressure, and, overall, reduced prevalence of metabolic syndrome in obese children ages 7-9. The primary aim of this study was to examine and evaluate the effects of a lifestyle intervention program that included nutrition and
exercise counseling, and its effects on anthropometric parameters and metabolic syndrome. Of the 83 overweight/obese youth participants, those with higher BMI’s presented with symptoms of metabolic syndrome including but not limited to raised blood pressure, increased total and LDL-cholesterol, lower HDL-cholesterol, and significantly higher triglycerides. However, lifestyle interventions led to a significant improvement in BMI, waist circumference, increased HDL-cholesterol and lowered triglycerides, thus, suggesting, that nutrition counseling and physical activity are essential in the treatment and prevention of obesity in the youth population (9). Studies have also found that group-based nutrition education programs were more successful than individual treatments (9, 12). Additional research suggests that nutrition education programs are more successful at managing childhood obesity in the long-term when the children’s families also receive nutrition education, and that treatment is more successful when along with children their caregivers are also provided with nutrition education (9, 10, 17-20).

Although, as previously stated, research on long-term benefits of nutrition education and reducing obesity and related health disorders is limited, especially in a minority pediatric population; evidence suggests that perceptions about losing cultural heritage serve as barriers which prevent African Americans from embracing a healthier lifestyle (21, 22). A focus group project led by Delores found a common perception among African Americans that eating a healthy diet meant abandoning their tradition and culture and conforming to the eating habits of a dominant culture (21). Other psychosocial factors which may prevent African Americans from implementing changes to their diets include participation in family and social gatherings, foods that celebrate and affirm culture, and a cultural acceptance of larger body images—especially for women who have had children (21). A study among African American girls, ages 12 to 18, found that favorable foods are selected based on taste, texture and appearance rather than their nutritive value. Healthy foods were perceived as not filling or satisfying, and that dietary decisions were heavily influenced by family and peers (22). The study also found that being satisfied with one’s weight was of greater importance than one’s actual weight, and that African American girls identified the dietary decisions of their white schoolmates as ‘healthy’ but believed it negatively affected the white girls’ self-esteem (22). Since lifestyle factors such as diet and body image are strongly influenced by individual, community, and social attitudes, a culturally sensitive approach should be an integral part of a nutrition education model to better serve minorities in order to successfully reduce obesity related health disparities.

Lack of nutrition knowledge may be a contributing factor for the higher rates of obesity among children of minority and low-income caregivers (13, 22). Morton and Guthrie found that low-income caregivers were less likely to use nutrition information found on food labels and were less conscious of the relationship between diet and disease when compared to caregivers with higher incomes (23). Low-income individuals in the study were also significantly less likely to consume a diet low in fat and cholesterol (23). A study conducted by Klohe-Lehman and colleagues on overweight/obese mothers <200% of the federal poverty line found that greater nutrition knowledge resulted in successful weight loss, and that African American women had the greatest knowledge gains when compared with those of Hispanic or white race/ethnicity (13). Thus, one component of an effective wellness programs for economically disadvantaged and underserved populations should be an education program designed to increase awareness, knowledge, and skills of basic nutrition. Caregivers have a considerable impact on their children’s health; they influence their children’s family life style and behavior, purchase foods, prepare meals, and serve as role models who help shape their children’s beliefs and attitudes. Several studies suggest that educating caregivers about nutrition improves weight loss in their children (12, 14, 17-19, 24).

CONCLUSION, OBSERVATIONS AND RECOMMENDATIONS

Growing incidences of obesity have reinforced the need for traditional approaches to treat and prevent the obesity epidemic, especially in the pediatric population. While there may be many fads and quick fix approaches to dealing with excess body weight and related health complications, nutrition and physical activity seem to be the only two methods that produce long-term results. Nutrition education is pivotal to reducing obesity related health disorders in both adults and children. In most studies reviewed for this manuscript, health professionals from across the globe concurred that the key factor in tackling obesity and decreasing incidences of metabolic syndrome, type 2 diabetes, hypertension and cardiovascular related health disorders was a sound nutrition education program that includes children and their caretakers. The findings of this review also suggest that there are many factors that allow nutrition education to be adopted and succeed in performing its functions, one being, family dynamics, community structure, and age/generation of caretakers. It appears from reviewing that most health professionals agree that nutrition education interventions while typically are conducted over a short period of time, for them to reproduce tangible results, long-term interventions are required to prevent and treat excess weight in childhood. In reviewing these articles it was observed that providing nutrition education most commonly resulted in reduced use of processed foods, soda/soft drinks and juices and increased consumption of vegetables and fruits, which is the cornerstone of a reliable obesity prevention plan.

The available evidence suggests that the fact the health professionals consider nutrition education as an important aspect of obesity treatment, however, long-term data from such strategies is largely unavailable reflects on the increasing incidence of obesity in the pediatric population worldwide. An epidemic of this nature cannot be treated without changing eating habits of both children and their caretakers, especially within the minority population. The main limitation of such work lies in the fact that information was extracted from many relevant but recent published content, while there were many programs offering nutrition education to reduce obesity, very few published content was available concerning programs targeting minority population exclusively and ones that were completed over longer terms. Thus, it is apparent that while nutrition education is key in treating and preventing obesity, especially in children, such programs need to be supported and funded more often in order to reduces obesity and related health disorders.

REFERENCES

2. Peinson, L., et al., Treatment Of Overweight And Obesity In...