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Investigating the role of high pro-inflammatory diets (high fat diets) and childhood obesity in adult cancer risk

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Childhood obesity has been a growing epidemic in the United States with about one in three of children considered overweight or obese. The increased number of overweight and obese children can be linked to several factors including nutrition and social economic status. Obesity in children can lead to numerous health complications including chronic inflammation and carcinogenesis. African American minorities are more likely to be diagnosed and die from cancer than any other race. Therefore, this study aims to eliminate or reduce preventable risk factors such as unhealthy nutrition and childhood obesity, which may reduce clinical manifestations of adult cancer outcomes. Areas of South Carolina have a long history of being under-developed which contribute to numerous problems such as obesity, poverty and sub-par health care. We have enrolled SC children from varying degrees of rurality to determine if obesity and/or high-fat pro-inflammatory diets contribute to increased levels of pro-inflammatory markers and obesity related genes to include: adiponectin, leptin, SAA1/2, Interleukin 1 and 6. Subjects were randomized into obese and non-obese groups based on BMI guidelines and given a nutritional survey to assess nutritional habits, exercise habits and body perceptions. The transcriptional levels of pro-inflammatory genes were measured by quantitative Real-time polymerase chain reaction. The results suggest increased expression of these pro-inflammatory markers is directly correlated to diet irrespective of weight class (normal, overweight, obese). Reducing childhood obesity and pro-inflammatory diets are beneficial in the reduction of cancer risk and will serve as preventive measures for early-stage onset of adult cancers.