

Does obesity exist in developing countries? Evaluation of a rural clinic population in the Dominican Republic



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Abstract

Background:

There is a growing obesity prevalence in developed and developing countries. According to the WHO, in 2014, more than 1.9 billion adults were overweight and 600 million of them were obese while 41 million children under the age of 5 were overweight or obese. Therefore, we are also seeing an increased prevalence of obesity related comorbidities like diabetes and hypertension.

Objective:

To determine the obesity rate in the bateyes in the Dominican Republic (DR), compare it to the US obesity rates US, and determine necessary interventions to prevent further complications from the growing obesity epidemic

Methods:

Patients were evaluated in mobile clinics in the bateyes in the DR during medical service trips in 2016 by UACOMP Global Health teams. A retrospective chart review was performed to collect patients' age, sex, height, and weight. The BMI was calculated for each patient. Pediatric (<18 y) patients' BMI was recorded as a percentile based on age.

Results:

Compared to the US pediatric population, there was a difference of 3.6% in overweight children and 4.4% in obese children among the clinic patients in the bateyes. Approximately 55% of the bateyes' adult population was overweight (BMI>25-30) versus 31% in the US. About 23% of the bateyes' adult patients was obese (BMI≥30) compared to 36% in the US.

Discussion:

These results indicate a growing obesity epidemic in the rural farming villages in the DR that is like the trend in the US. We hope to implement public health interventions by educating this population about the dangers of obesity and its associated comorbidities, including coronary artery disease and diabetes.

Introduction

Many epidemiologic studies are demonstrating a growing obesity prevalence within developing countries as well as developed countries. Over the years, the University of Arizona College of Medicine Phoenix (UACOMP) Global Health Interest Group (GHIG) have witnessed these changes as they travel to the DR biannually to run mobile primary care clinics in the bateyes of San Pedro de Macoris. Since the inception of these trips, the group has observed an increasing number of patients who were overweight, along with an increased prevalence of diabetes and high blood pressure in this population. Due to these observations, we decided to review our current patient population demographics in order to determine the scope of the problem and appropriately plan for future trips.

Methods

Patients were evaluated in mobile clinics in the bateyes in the DR during two, one-week long medical service trips in 2016 by UACOMP GHIG. During triage, vital signs, height, and weight were obtained on all patients over the age of 2 years. Exclusion criteria included pregnancy or inability to take appropriate measurements (e.g. older patients unable to stand). Pediatric (<18 years) patients' BMI was recorded as a percentile based on age.

The patient health information was entered into the electronic health record system, PracticeFusion. A retrospective chart review was performed to collect patients' age, sex, height, and weight. The body mass index (BMI) was calculated for each patient. Simple descriptive statistics were used to evaluate the rates of obesity in the bateyes. These rates were then compared to the rates in the United States, using the 1 Sample Test of proportion to compare percentage differences in obesity rates in the US versus the bateyes in the DR.

Results

A total of 403 patients were evaluated, including 152 (37.7%) children under 18 years of age, and 179 (44.4%) female adults over 18 years of age. In the adult population (age >18 y), 44.22% of the patients were within normal weight, while 29.08% were overweight. In the pediatric population, the findings are similar to adults where a majority of the patients were normal weight, and 12.50% and 12.50% of the pediatric patients were overweight or obese.

When comparing the US and DR clinic adult population, it was found that 54.8% of the DR clinic population was overweight compared to 31.1% of the US population. In addition, 23% of the DR clinic adult population was obese versus 35.7% of the US adult population.

When comparing the rates of obesity and overweight in the US versus the DR clinic population, there was no statistically significant difference between the US and DR clinic female populations. However, there was a statistically significant ($p<0.05$) difference between the two male populations. This was likely due to the smaller sample size of adult males that were evaluated in the DR clinic ($n=72$). In the pediatric population, the rates of obesity and overweight between the US and DR clinic children did not reach significance.

From these figures, the bateyes clinic population were found to mimic the obesity and overweight prevalence that is seen in the US. This can be seen by the lack of statistical significance between the two countries.

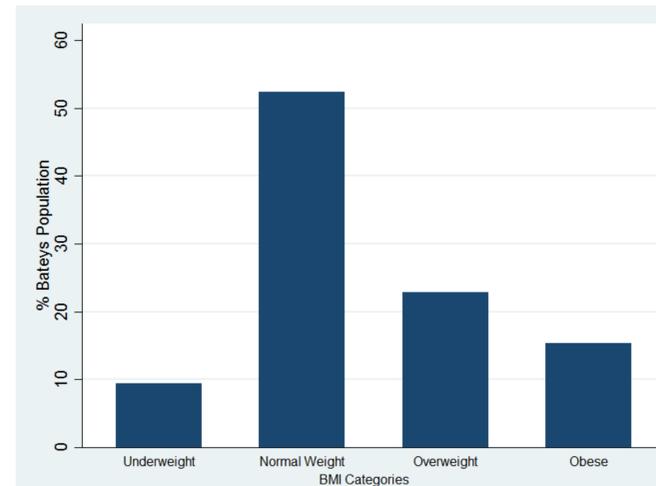


Figure 1: Percentage of underweight, normal weight, overweight, and obese patients in the bateyes population (adult and pediatric)

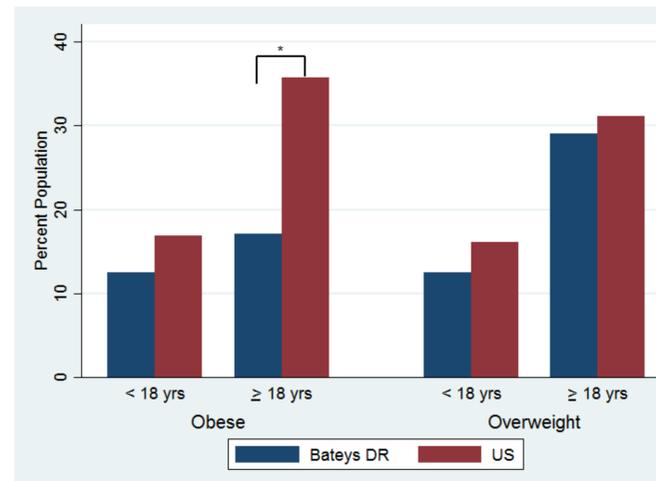


Figure 2: Difference in prevalence of obesity and overweight patients in US versus bateyes in the DR in the pediatric and adult population (* denotes statistical significance)

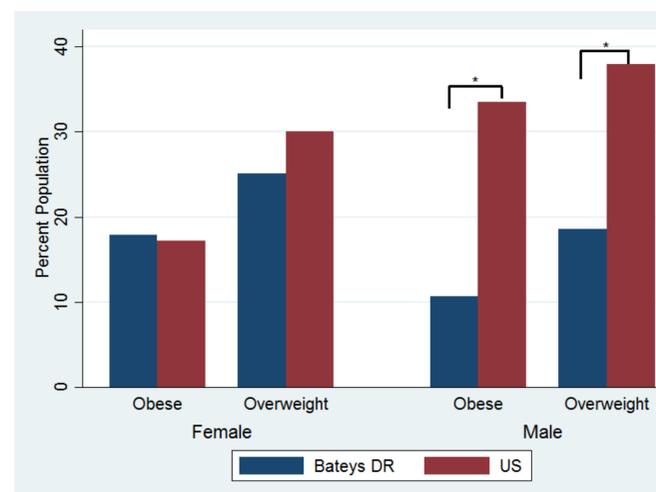


Figure 5: Difference in prevalence of obesity and overweight between men and women in the US versus men and women in the bateyes in the DR (* denotes statistical significance)

Discussion

Global Alliance for Improved Nutrition reported an increase in prevalence of overweight and obesity in males and females across all age groups in the Dominican Republic between 1980 and 2013. Other studies also revealed an increase in prevalence of obesity in children and adults across most Latin American countries in both rural and urban settings that mimics trends in the US and Europe. Although previous studies evaluated the obesity epidemic in Latin America, there have been no reported studies on our specific clinic population in the bateyes of San Pedro de Macoris. Based off personal observations over the last several years, clinic physicians and students started to notice an increased number of patients who were overweight, need for more antihypertensives and medications to control diabetes, and consumption of readily available processed snacks and sodas at nearby convenience stores located in most bateyes. The lack of statistical significance demonstrates a minimal difference between the US and DR clinic population, suggests that the prevalence of being overweight in the DR is similar to the US. This contradicts what most may commonly believe, given that the US is a developed country with ready access to a variety of healthy foods and the people of the bateyes lack access to enough food, let alone healthy varieties. After 18 years of age, the adults of the bateyes make a jump to only a 2% difference in incidence of being overweight compared to the US. This could be due to metabolic changes as one ages, but also could be attributed to having access to only processed foods since childhood. This is a difficult situation due to the remote location of the bateyes and a cost barrier as well as access to healthier food options. Therefore, we must at least try to educate on portion control and exercise, so we can attempt to prevent the development of chronic conditions such as diabetes in a population that also has minimal access to healthcare.

Acknowledgements

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