

# Adenovirus-36 Antibody Status and BMI Comparison Among Obese Missouri Adolescents

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## Introduction

Worldwide obesity rates have skyrocketed since 1980, a phenomenon often attributed due to changes in diet and physical activity. Adenovirus-36 (Adv-36) has been implicated in the multi-factorial etiology of obesity. Adv-36 has been shown to cause obesity in animal models, and previous studies in the U.S. and internationally have found a higher prevalence of Adv-36 antibodies in obese persons compared to non-obese persons. The prevalence of the virus in overweight and normal-weight individuals has never been studied in a Missouri population.

## Purpose

To investigate if the prevalence of prior Adv-36 infection in obese Missouri adolescents and whether Adv-36 antibody positivity is associated with increased body mass index (BMI).

## Methods

Subjects 10-18 years old attending an adolescent obesity clinic were recruited to participate in data collection. After subject assent and parent consent, 10 mL of serum was collected and sent to a reference laboratory for Adv-36 antibody testing via ELISA assay. Wilcoxon rank sum test was used to compare the difference in body mass index (BMI) at time of testing between Adv-36 positive and negative groups.

## Results

Serum samples from 20 obese adolescents were obtained. Adv-36 antibodies were detected in 8 (40%) of the samples. Mean BMI of the Adv-36 positive group was 46.4 (SD 6.0) kg/m<sup>2</sup> and mean BMI of the Adv-36 negative group was 38.2 (SD 9.4) kg/m<sup>2</sup> (p=0.032). There was no significant difference in age between the groups (p=0.139).

Figure 1: Obese Adenovirus-36 Positive Subjects by Study

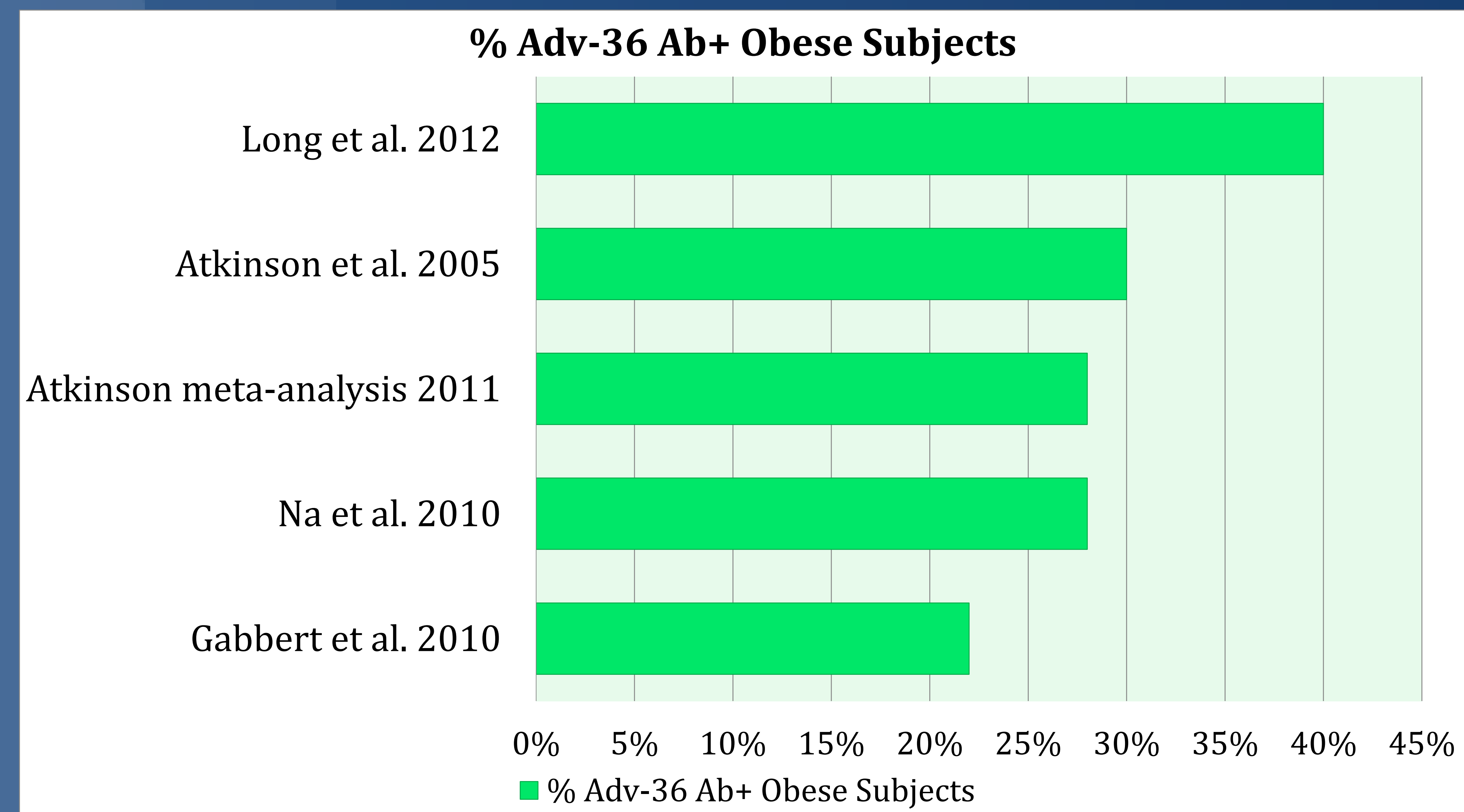


Table 1. Comparison of Age and BMI between Adv-36 Positive and Negative Subjects

	Adv-36 Positive	Adv-36 Negative	One-Sided p-value
Subject Age	16.21 (SD 2.45)	15.23 (SD 2.32)	p=0.139
BMI (kg/m <sup>2</sup> )	46.4 (SD 6.0)	38.2 (SD 9.4)	p = 0.032

## Conclusions

Adenovirus-36 antibodies are present among obese Missouri adolescents, and prevalence rates appear to be greater than those found in prior studies using comparable populations (Figure 1). Presence of Adv-36 antibodies was significantly associated with increased BMI at time of testing, but not significantly associated with age. Subjects positive for Adv-36 antibodies had a significantly higher mean BMI than those who were antibody negative, with no difference in age (Table 1). Findings support the suggested role of adenovirus-36 as a risk factor for childhood and adolescent obesity. This study was limited by a small sample size. Further research should be directed towards determining the antibody status of normal-weight adolescents in Missouri as a control group.

## References

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