INTRODUCTION

Hyperinsulinemia continues to be an epidemic in the United States (U.S.) and around the world. There has been an increase in both type 1 (1) and type 2 diabetes (2). Diabetes significantly increased at the turn of the century, however, the rise in hyperinsulinemia was followed by a drop and plateau. The 20-year trend for hyperinsulinemia (defined as the 75th percentile of log-transformed insulin) was nonlinear. The 2009-2010 age-adjusted prevalence of hyperinsulinemia increased by ~18% in the study population between 1999/2000 and 2017/2018 (21.5% to 35.4%, P for trend 0.0034). The age-adjusted prevalence of hyperinsulinemia increased by ~65% in the first joinpoint segment, while the 2009-2010 age-adjusted prevalence of hyperinsulinemia decreased ~29% in the second joinpoint segment, but not significantly (35.4% to 25.3%, P for trend=0.10). The 2009/2010 age-adjusted prevalence of hyperinsulinemia was not significantly different from that of the 1999/2000 age-adjusted prevalence. The primary aim in this study was to provide trends in hyperinsulinemia in U.S. adults without diabetes between 1999 and 2018.

METHODS

A fasting sub-sample of male and nonpregnant females (n=23,447) ≥20 years of age) without diabetes, who completed the in-home interview questionnaire and visited a mobile examination center to provide anthropometric measurements (WC and BMI), and serum blood samples necessary for the measurement of fasting insulin and other clinical biomarkers that were used in the analyses. The estimated age-adjusted prevalence of diabetes in U.S. type 2 diabetes (T2D) (2), however, most cases continue to be T2D around the world. There has been an increase in both type 1 and type 2 diabetes.

RESULTS

The data in this study were managed using SAS 9.4 (13). SAS was used to conduct complex variable recodes, data coding validation and to establish the p values for trend for each segment. SAS-SURVEY procedures were subsequently used to conduct the analyses, incorporating sampling weights within the context of the correlated multi-stage complex sampling design inherent to NHANES. Joinpoint 4.1 software was used to determine the best joinpoint (14).

DISCUSSION

Overall, hyperinsulinemia rates have significantly increased among U.S. adults during the past 20 years. Central adiposity and BMI are both strongly associated with hyperinsulinemia.

REFERENCES