



Recent trends in the prevalence of low-dose aspirin use for primary and secondary prevention of cardiovascular disease in the United States, 2012–2015[☆]

Mark Stuntz^{*}, Brent Bernstein

Deerfield Institute, New York, NY, United States

ARTICLE INFO

Article history:

Received 13 October 2016
Received in revised form 6 December 2016
Accepted 26 December 2016
Available online 28 December 2016

Keywords:

Aspirin
Epidemiology
Cardiovascular disease

ABSTRACT

Aspirin therapy has been shown to be an effective prevention measure to reduce the risk of new or recurring cardiovascular events. The aim of this study was to provide an epidemiological analysis of low-dose aspirin use for primary and secondary CVD prevention from 2012 to 2015. Estimates of self-reported low-dose aspirin use for primary and secondary CVD prevention were obtained from the National Health Interview Survey for the years 2012–2015. Temporal changes in the prevalence of aspirin use for primary and secondary CVD prevention were assessed using logistic regression. During 2012–2015, 23.3% of respondents self-reported as taking aspirin for primary CVD prevention, decreasing from 23.7% in 2012 to 21.8% in 2015. Also during this period, 8.4% self-reported as taking aspirin for secondary CVD prevention, decreasing from 8.9% in 2012 to 8.2% in 2015. Overall, the prevalence of aspirin use for CVD prevention declined from 32.6% in 2012 to 30.0% in 2015. This study shows that over 30% of the adult population self-reports as taking low-dose aspirin for primary or secondary CVD prevention. Despite the decline in this prevalence over the previous four years, aspirin therapy remains a highly-utilized means of preventing CVD.

© 2016 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Cardiovascular disease (CVD) produces immense health and economic burdens in the United States. CVD is the leading cause of death, accounting for 30.8% of all deaths in the United States in 2013 (Mozaffarian et al., 2016). For 2011 to 2012, the estimated annual direct costs for CVD were \$193.1 billion. By comparison, cancer, the second leading cause of death, had an estimated direct cost of \$88.7 billion. CVD also accounted for an additional \$123.5 billion in indirect costs from lost future productivity, bringing the total attributable cost to \$316.6 billion (Mozaffarian et al., 2016).

Aspirin is one of the oldest drugs in use, dating back to the times of the ancient Greeks when the bark of the willow tree became known for its anti-inflammatory properties. Acetylsalicylic acid, the modern version of aspirin, has been in constant use since being introduced to the public in 1904 (Ittaman et al., 2014; Fuster and Sweeny, 2011). Later studies demonstrated the anti-thrombotic effects of low-dose aspirin regimens (Miner and Hoffhines, 2007).

Aspirin has been shown to be effective as a preventive therapy among patients at risk of developing CVD (primary prevention) as

well as among patients who suffer from one or more CVD events (secondary prevention) (Baigent et al., 2009). The United States Preventive Services Task Force (USPSTF) currently recommends low-dose aspirin use for primary CVD prevention (Bibbins-Domingo and US Preventive Services Task Force, 2016) and the American Heart Association and American College of Cardiology Foundation jointly recommend low-dose aspirin use for secondary CVD prevention (Smith et al., 2011).

Previous cross-sectional studies have examined the use of aspirin use for CVD prevention (Mainous et al., 2014; Fang et al., 2015), though to our knowledge there are no existing studies that have utilized multiple years of data to examine possible trends in the epidemiology of aspirin and CVD prevention. The aim of this study was to provide an accurate and up-to-date epidemiological analysis of the use of low-dose aspirin for both primary and secondary CVD prevention from 2012 to 2015.

2. Methods

This study utilized data from the 2012–2015 National Health Interview Survey (NHIS), one of the major data collection programs of the National Center for Health Statistics (NCHS) which is part of the Centers for Disease Control and Prevention (CDC). The NHIS is the principal source of information on a broad range of health topics for the civilian noninstitutionalized population and has been conducted continuously since 1957. The sampling plan follows a multistage area probability design that permits the representative sampling of households and

[☆] Prior presentations: this manuscript is based on work previously presented in August 2016 at the International Academy of Cardiology Annual Scientific Sessions – 21st World Congress on Heart Disease in Boston, MA.

^{*} Corresponding author at: 780 Third Avenue, 37th Floor, New York, NY 10017, United States.

E-mail address: mstuntz@deerfield.com (M. Stuntz).

noninstitutional group quarters (National Center for Health Statistics, 2016). The NHIS Core questions remain largely unchanged from year to year, allowing for trends analysis or for data from more than one year to be pooled to increase sample size for analytic purposes (National Center for Health Statistics, 2016). The current study focuses on adults aged 40 years and older, because no aspirin-use questions were asked to participants under the age of 40.

All adults over 40 were asked if a doctor or other health professional had ever recommended that they take low-dose aspirin to prevent or control heart disease. Those who answered “yes” were asked if they were currently following this advice. Participants who did not confirm that a doctor had recommended they take aspirin were asked if they were taking aspirin on their own to prevent or control heart disease.

Adults with CVD were defined as those who self-reported as having ever been told that they had at least one of: coronary heart disease, angina pectoris, myocardial infarction, or stroke. Individuals who self-reported as currently taking aspirin but did not self-report as having any of the four CVDs were classified as taking aspirin for primary CVD prevention. Those who self-reported as currently taking aspirin as well as having had at least one of the CVDs were classified as taking aspirin for secondary CVD prevention.

For trend analyses, age was classified as three groups: 40–49 years, 50–64 years, and 65 years and older. Race/ethnicity was self-reported and categorized as non-Hispanic whites, non-Hispanic blacks, Hispanics, and other. Body mass index (BMI) was calculated according to the World Health Organization’s definitions: underweight (BMI < 18.50 kg/m²), normal weight (BMI 18.50–24.99 kg/m²), overweight (BMI 25–29.99 kg/m²), and obese (BMI ≥ 30 kg/m²) (World Health Organization, 2016). Modifiable CVD risk factors among primary CVD prevention patients were current smoking, diabetes, high cholesterol within the past year, hypertension within the past year, obesity, and physical inactivity (defined as patients who responded “never” or “unable” to three questions asking the frequency of their exercise habits).

All analyses were performed with SPSS Complex Samples module version 23.0 (IBM Corp., Armonk, NY). Complex sample data analysis adjusts for weights, cluster, and stratification of the sampling design to produce unbiased national estimates of population means and frequencies from the sample after taking into account weights for over- or undersampling of specific groups (Saylor et al., 2012). The survey design-based variance estimation method is Taylor linearization (Bieler et al., 2010). In the case of the NHIS, complex sample analysis can be used to produce national estimates that are representative of the adult civilian noninstitutionalized US population (Parsons et al., 2014).

Annual trends in the prevalence of aspirin use for primary and secondary CVD prevention were examined by age (age-specific prevalence), sex, race/ethnicity, geographic region, household income, health insurance status, BMI, and education (age-adjusted prevalences). Age-adjusted prevalences were calculated using the year 2000 US population as the standard (direct method) (Klein and Schoenborn, 2001). Age-specific and age-adjusted prevalences were estimated with corresponding 95% confidence intervals (CIs). The CSLOGISTIC procedure was used to estimate the average rates of change over time, and trends were tested by evaluating the parameter for years as a continuous variable. Trend significance was assessed via a Wald *F* test with $\alpha = 0.05$.

This study was approved by the Deerfield Institute Research Review Committee and deemed to be in full compliance of HIPAA (Health Insurance Portability and Accountability Act) guidelines, as it did not collect protected private health information that could be used to identify participants. Survey participation in the NHIS is voluntary and the confidentiality of responses is assured under Section 308(d) of the Public Health Service Act (National Center for Health Statistics, 2016).

3. Results

The 2012–2015 NHIS included a total of 90,558 adults over the age of 40. Demographic characteristics of the sample are presented in Table 1. During 2012–2015, 12.3% (95% CI: 12.0%–12.6%) of adults self-reported as having at least one CVD. Coronary heart disease was the most common CVD, prevalent among 7.1% (95% CI: 6.9%–7.3%) of adults, followed by myocardial infarction (5.0%; 95% CI: 4.8%–5.2%), stroke (4.1%; 95% CI: 4.0%–4.3%), and angina pectoris (3.0%; 95% CI: 2.8%–3.1%).

Table 2 describes the prevalence of aspirin use for primary CVD prevention by select demographic characteristics. Aspirin use prevalence was highest among adults aged 65 years and older; males; non-Hispanic whites; those living in the Midwest region; those with annual household income of \$100,000 and over; those with health insurance; obese; those with at least some college education; and those with four or more modifiable CVD risk factors.

The overall age-adjusted prevalence of aspirin use for primary CVD prevention was 22.1% (95% CI: 21.9%–22.3%), decreasing from 22.8% in 2012 to 20.4% in 2015. Based on the complex samples logistic regression model, this corresponds to an average annual rate of change of -2.7% ($p = 0.003$). All age groups saw significant decreases in prevalence, though the 40–49 years age group saw the greatest decline (-7.9% average annual rate of change; $p = 0.001$). While the majority of the select demographics saw a decline in aspirin use for primary CVD prevention,

Table 1
Characteristics and demographics of adults 40 years of age and older by year of NHIS data.

	2012 % (95% CI)	2013 % (95% CI)	2014 % (95% CI)	2015 % (95% CI)	2012–2015 total % (95% CI)
Sample size	22,091	22,167	23,972	22,328	90,558
Age group					
40–49	29.1% (28.4–29.8)	28.5% (27.7–29.3)	27.9% (27.0–28.7)	27.2% (26.3–28.2)	28.2% (27.7–28.6)
50–64	41.9% (41.1–42.8)	41.9% (41.0–42.7)	41.9% (40.9–42.8)	41.8% (40.8–42.7)	41.8% (41.4–42.4)
≥65	29.0% (28.2–29.8)	29.6% (28.9–30.4)	30.3% (29.4–31.2)	31.0% (30.1–32.0)	30.0% (29.5–30.5)
Sex					
Male	47.3% (46.4–48.1)	47.6% (46.7–48.5)	47.3% (46.4–48.3)	47.3% (46.4–48.2)	47.4% (46.9–47.8)
Female	52.7% (51.9–53.6)	52.4% (51.5–53.3)	52.7% (51.7–53.6)	52.7% (51.8–53.6)	52.6% (52.2–53.1)
Race					
Non-Hispanic white	71.9% (71.1–72.8)	71.4% (70.6–72.3)	70.8% (69.9–71.7)	70.0% (69.0–70.9)	71.0% (70.4–71.7)
Non-Hispanic black	10.6% (10.0–11.2)	10.6% (10.0–11.2)	10.7% (10.1–11.3)	10.9% (10.3–11.5)	10.7% (10.3–11.1)
Hispanic	11.2% (10.6–11.8)	11.6% (10.9–12.2)	11.8% (11.2–12.4)	12.1% (11.5–12.7)	11.7% (11.2–12.1)
Other	6.2% (5.8–6.7)	6.4% (6.0–6.9)	6.7% (6.3–7.2)	7.0% (6.5–7.5)	6.6% (6.3–6.9)
CVD prevalence					
Coronary heart disease	7.4% (7.0–7.8)	7.5% (7.1–7.9)	6.5% (6.1–6.9)	7.1% (6.7–7.6)	7.1% (6.9–7.3)
Angina pectoris	3.0% (2.7–3.3)	3.1% (2.8–3.4)	2.8% (2.5–3.1)	3.0% (2.7–3.3)	3.0% (2.8–3.1)
Myocardial infarction	5.1% (4.8–5.5)	5.0% (4.7–5.3)	4.9% (4.5–5.3)	4.9% (4.5–5.3)	5.0% (4.8–5.2)
Stroke	4.1% (3.8–4.5)	4.3% (3.9–4.6)	4.0% (3.7–4.3)	4.1% (3.8–4.4)	4.1% (4.0–4.3)
≥ 1 CVD	12.7% (12.2–13.3)	12.7% (12.2–13.2)	11.7% (11.1–12.3)	12.1% (11.5–12.7)	12.3% (12.0–12.6)

Download English Version:

<https://daneshyari.com/en/article/5723769>

Download Persian Version:

<https://daneshyari.com/article/5723769>

[Daneshyari.com](https://daneshyari.com)