Use of Low-Dose Aspirin as Secondary Prevention of Atherosclerotic Cardiovascular Disease in US Adults (from the National Health Interview Survey, 2012)

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Current guidelines recommend that adults with atherosclerotic cardiovascular disease take low-dose aspirin or other antiplatelet medications as secondary prevention of recurrent cardiovascular events. Yet, no national level assessment of low-dose aspirin use for secondary prevention of cardiovascular disease has been reported in a community-based population. Using data from the 2012 National Health Interview Survey, we assessed low-dose aspirin use in those with atherosclerotic cardiovascular disease. We estimated the prevalence ratios of low-dose aspirin use, adjusting for sociodemographic status, health insurance, and cardiovascular risk factors. In those with atherosclerotic cardiovascular disease (n = 3,068), 76% had been instructed to take aspirin and 88% of those were following this advice. Of those not advised, 11% took aspirin on their own. Overall, 70% were taking aspirin (including those who followed their health care provider's advice and those who were not advised but took aspirin on their own). Logistic regression models showed that women, non-Hispanic blacks and Hispanics, those aged 40 to 64 years, with a high school education or with some college, or with fewer cardiovascular disease risk factors were less likely to take aspirin than men, non-Hispanic whites, those aged ≥65 years, with a college education or higher, or with all 4 selected cardiovascular disease risk factors, respectively. Additional analyses conducted in those with coronary heart disease only (n = 2,007) showed similar patterns. In conclusion, use of low-dose aspirin for secondary prevention was 70%, with high reported adherence to health care providers' advice to take low-dose aspirin (88%) and significant variability within subgroups. Published by Elsevier Inc. (Am J Cardiol 2015;115:895–900)

The effectiveness of aspirin therapy in reducing risk for myocardial infarction, ischemic stroke, and fatal coronary events in subjects with pre-existing atherosclerotic cardiovascular disease is well documented.[1,2] Current guidelines recommend that adults with atherosclerotic cardiovascular disease take 75 to 162 mg of aspirin (low-dose aspirin) daily to prevent recurrence of cardiovascular events.[3–5] However, data on the current use of low-dose aspirin therapy for secondary prevention of cardiovascular disease in community-dwelling adults in the United States are limited. Most published studies in the United States have focused on clinical inpatient[6–8] and outpatient[9–11] settings and are related to aspirin recommendations and use at discharge or after evaluation in outpatient settings. Using data from the 2012 National Health Interview Survey (NHIS), we provide current estimates of self-reported low-dose aspirin use for secondary prevention in community-dwelling adults with atherosclerotic cardiovascular disease.

Methods

The NHIS is a multipurpose health survey conducted continuously throughout the year by the Centers for Disease Control and Prevention and is the principal source of information on the health of the civilian, noninstitutionalized population of the United States. The NHIS has been conducted continuously since 1957, and contains 4 main modules: Household, Family, Sample Adult, and Sample Child. In 2012, supplemental questions on aspirin use were included in the Sample Adult questionnaire. Data from the Household, Family, and Sample Adult sections were used in this analysis. The response rate for the Sample Adult component in 2012 was 61.2%. Detailed information on the survey design and methods can be found at the NHIS Web site (*http://www.cdc.gov/nchs/nhis.htm*).

Low-dose aspirin use was asked of all adults aged ≥40 years. There were 4 questions related to low-dose aspirin use: (1) "Has a doctor or other health professional ever told you to take a low-dose aspirin each day to prevent or control heart disease?"; (2) those who answered "yes" to this question were asked, "Are you now following this advice?"; (3) those who were not following the advice were

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

See page 900 for disclosure information.

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Table 1
Characteristics of adults aged 40 and over eligible* to take low-dose aspirin for secondary prevention of cardiovascular disease, by definition of atherosclerotic cardiovascular disease, United States, 2012†

Variable	Coronary Heart Disease and/or Stroke (n = 3,068) % (95% Confidence interval)	Coronary Heart Disease Only (n = 2,007) % (95% Confidence interval)
Age (years)		
40-64	46.2% (42.8-49.8)	46.3% (43.6-49.1)
≥65	53.8% (51.5-56.1)	53.7% (50.9-56.5)
Sex		
Men	53.9% (51.5-56.4)	58.1% (55.0-61.1)
Women	46.1% (43.6-48.5)	41.9% (38.9-45.0)
Race/Ethnicity		
Non-Hispanic White	74.5% (72.4-76.5)	77.2% (74.8-79.4)
Non-Hispanic Black	12.4% (11.0-14.1)	10.6% (9.1-12.3)
Hispanic	8.9% (7.8-10.2)	8.3% (7.0-9.8)
Other	4.2% (3.4-5.2)	3.9% (3.0-5.1)
Education		
<High school	25.2% (23.4-27.1)	23.6% (21.4-25.9)
High school	26.8% (24.8-28.8)	27.1% (24.9-29.5)
Some college	29.3% (27.2-31.4)	29.5% (27.0-32.2)
≥College	18.8% (17.0-20.6)	19.7% (17.5-22.1)
Body mass index (Kg/M^2)		
Normal	27.9% (26.0-29.9)	26.9% (24.7-29.3)
Overweight	37.4% (35.3-39.6)	37.4% (35.0-40.0)
Obesity	34.6% (32.6-36.8)	35.6% (32.9-38.4)
Have health insurance	92.0% (90.7-93.1)	91.7% (90.0-93.1)
Self-reported ulcer	16.6% (15.0-18.3)	16.5% (14.6-18.6)
Self-reported arthritis‡	50.7% (48.2-53.1)	50.8% (48.0-53.6)
Self-reported hypertension	67.1% (64.9-69.2)	66.1% (63.4-68.7)
Self-reported diabetes mellitus	30.4% (28.4-32.6)	29.8% (27.2-32.6)
Self-reported high blood cholesterol	66.1% (64.0-68.1)	67.9% (65.4-70.4)
Smoker	19.7% (17.9-21.6)	18.1% (16.2-20.2)
Number of risk factors§		
0	10.6% (9.2-12.2)	10.1% (8.5-11.9)
1	25.8% (23.8-27.9)	26.9% (24.5-29.5)
2	36.8% (34.7-38.9)	37.0% (34.5-39.7)
3	23.8% (21.7-25.9)	23.2% (20.7-25.9)
4	3.1% (2.4-3.9)	2.8% (2.0-3.8)

* An adult's eligibility to take low-dose aspirin is determined by either having been told by a health professional that he/she have coronary heart disease and/or stroke, or having been told by a health professional that he/she has coronary heart disease.

† Data source: CDC/NCHS, National Health Interview Survey, 2012.

‡ Arthritis included arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia.

§ Include hypertension, diabetes, high blood cholesterol and smoking.

asked, "Did a doctor or other health professional advise you to stop taking a low-dose aspirin every day?"; and (4) those who had not been advised (or those who did not know if they had been advised to take low-dose aspirin) were asked "On your own, are you now taking a low-dose aspirin each day to prevent or control heart disease?".

Adults with atherosclerotic cardiovascular disease were defined as those who answered "yes" to any of the following 4 questions: "Have you ever been told by a doctor or other health professional that you had coronary heart disease?"; "Have you ever been told by a doctor or other health professional that you had angina, also called angina pectoris?"; "Have you ever been told by a doctor or other health professional that you had a heart attack (also called myocardial infarction)?"; or "Have you ever been told by a doctor or other health professional that you had a stroke?".

Other characteristics investigated included demographic variables: age (40 to 64 and ≥65 years), gender, race/ethnicity (non-Hispanic whites, non-Hispanic blacks, non-Hispanic others, and Hispanics), level of education (<high school graduate, high school graduate, some college, and college graduate), and health insurance status (any health insurance and no health insurance). Body mass index (BMI) was calculated using weight and height (BMI = kg/m^2) and categorized as normal weight (<25), overweight (25 to 29.9), and obese (≥30). The 4 cardiovascular disease risk factors considered were diabetes ("Have you ever been told by a doctor or other health professional that you have diabetes or sugar diabetes?", those with borderline diabetes were not considered to have diabetes), hypertension ("Were you told on two or more different visits that you had hypertension, also called high blood pressure?"), high blood cholesterol ("Have you ever been told by a doctor or other health professional that you had high cholesterol?"), and current smoking status (defined as an answer of "yes" to the question "Have you smoked at least 100 cigarettes in your entire life?" and an answer of "every day" or "some days" to the question "Do you now smoke cigarettes every day, some days or not at all?"). Other factors that could affect aspirin use included history of ulcer ("Have you ever been told by a doctor or other health professional that you had an ulcer? This could be a stomach, duodenal, or peptic ulcer.") or arthritis ("Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?").

Those with a history of atherosclerotic cardiovascular disease were defined as the population at risk of recurrent cardiovascular events and were eligible for low-dose aspirin use for secondary prevention based on current recommendations.[3] We determined the distribution of demographic characteristics and cardiovascular disease risk factors among the population at risk. We also estimated the age-standardized percentage of the population using low-dose aspirin for secondary prevention, which included those who followed a health care provider's advice and those who took low-dose aspirin on their own, using the 2000 US Census standard projected population.[12] To determine whether low-dose aspirin use varied by other characteristics, we used logistic regression to calculate prevalence ratios (and 95% confidence intervals [CIs])[13] of low-dose aspirin use by age, gender, race/ethnicity, levels of education, BMI, health insurance status, history of ulcer, and history of arthritis. In addition, we also tested for a linear trend in the relation between cardiovascular risk and aspirin use by substituting the number of risk factors as a continuous variable in the model.

The primary definition of atherosclerotic cardiovascular disease in this analysis includes both coronary heart disease and stroke. However, aspirin is contraindicated for those who have survived hemorrhagic strokes. The NHIS does not classify strokes as either ischemic or hemorrhagic, and therefore, a second definition of atherosclerotic cardiovascular disease including only those with coronary heart disease was used in additional analyses.