Health Insurance Status and Clinical Cancer Screenings Among U.S. Adults

Guixiang Zhao, MD, PhD,[1] Catherine A. Okoro, MS, PhD,[1] Jun Li, MD, PhD,[2] Machell Town, MS, PhD[1]

Introduction: Health insurance coverage is linked to clinical preventive service use. This study examined cancer screenings among U.S. adults by health insurance status.

Methods: The Behavioral Risk Factor Surveillance System collected data on healthcare access and cancer screenings from 42 states and the District of Columbia in 2014. Data analyses were conducted in 2016. Participants' health insurance status during the preceding 12 months was categorized as adequately insured, underinsured, or never insured. Primary type of insurance coverage was categorized as employer-based or Medicare (aged ≥65 years), self-purchased plan, Medicaid/Medicare (aged <65 years), and other public insurance. Clinical cancer screenings were assessed following the U.S. Preventive Services Task Force recommendations.

Results: Compared with adequately insured adults, underinsured and never insured women were 6% ($p<0.001$) and 41% ($p<0.001$) less likely to receive breast cancer screening, respectively; 1% ($p<0.05$) and 19% ($p<0.001$) less likely to receive cervical cancer screening, respectively; and 3% ($p<0.01$) and 47% ($p<0.001$) less likely to receive colorectal cancer screening, respectively; underinsured and never insured men were 6% ($p<0.001$) and 52% ($p<0.001$) less likely to receive colorectal cancer screening, respectively. Compared with adults with employer-based insurance/Medicare (aged ≥65 years), women with all other types of insurance were less likely to receive breast and cervical cancer screenings; women and men with self-purchased plans were less likely to receive colorectal cancer screening; however, men with other public insurance were more likely to receive colorectal cancer screening.

Conclusions: Disparities in cancer screenings by health insurance status and type of insurance exist among U.S. adults. Greater efforts to increase screening rates and to reduce disparities in cancer screenings are an important strategy to help improve overall population health.
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INTRODUCTION

Cancer remains a major threat to population health and ranks as the second leading cause of death in the U.S.[1] Cancer screenings are essential for early detection and diagnosis of cancers, resulting in improved prognosis and reduced mortality among screened individuals. Health insurance coverage is a strong predictor for receiving cancer screenings. Researchers have shown significantly lower screening rates among adults who are uninsured than those with health insurance coverage.[2,3] Cancer patients who are uninsured are also more likely to present advanced stages of cancer with more elevated metastatic markers.[4,5] Moreover, type of health insurance coverage is associated with receipt of preventive health services. For example, women with public insurance have been found to have a lower mammogram screening rate than those with private insurance or Medicare.[2]

For people with insurance coverage, having low household income, personal financial crisis, or out-of-pocket health expenses for chronic conditions may be a barrier for timely receipt of preventive healthcare services. People experiencing these barriers, often described as being underinsured, are more likely to delay or forgo needed care.[6,7] At present, limited information is available on the cancer screening rates among adults who are underinsured or uninsured or how cancer screening rates may vary by type of insurance individuals have. This study examines the cancer screening rates associated with health insurance status and type of insurance coverage among U.S. adults.

METHODS

Study Population

Data for this study were collected in 2014 through Behavioral Risk Factor Surveillance System (BRFSS) and were analyzed in 2016. The BRFSS is a state-based telephone (both landline and cellular phone) survey conducted annually in all 50 states, the District of Columbia (DC), and participating U.S. territories, among non-institutionalized adults aged ≥18 years. The BRFSS survey design and sampling, data collection, and weights have been described elsewhere.[8,9] The median response rate was 47.0% for the 2014 BRFSS.

Measures

In this study, data from 42 states and DC that implemented both the core questions and an optional module about healthcare access were analyzed.[10] Participants were asked the following questions: (1) *Do you have any kind of health care coverage including health insurance, prepaid plans such as HMOs, government plans such as Medicare, or Indian Health Service?* (2) *In the past 12 months was there any time when you did not have any health insurance or coverage?* (3) *Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?* (4) *Was there a time in the past 12 months when you did not take your medication as prescribed because of cost? Do not include over-the-counter medication,* and (5) *Do you currently have any health care bills that are being paid off over time?* Based on these questions, health insurance status during preceding 12 months was categorized as (1) adequately insured—those who were continuously insured over the past 12 months and had no cost barriers for access to care (cost barriers were defined as adults who needed to see a doctor or to take prescription medication but could not because of cost, or had to pay off healthcare bills over time[11]); (2) underinsured—those who had insurance coverage but had a gap in coverage or had cost barriers for access to care in the past 12 months; and (3) never insured—those who had no insurance coverage in the past 12 months.

Participants were also asked: *Do you have Medicare?* and *What is the* primary *source of your health care coverage? Is it a plan purchased through an employer or union (includes plans purchased through another person's employer); a plan that you or another family member buys on your own; Medicare; Medicaid or other state program; TRICARE (formerly CHAMPUS), VA, or Military;* *Alaska Native, Indian Health Service, Tribal Health Services; or some other source?* Based on these two questions, the type of insurance coverage was categorized as (1) employer-based or Medicare for adults aged ≥65 years; (2) self-purchased plan—a plan that an adult or another family member purchased on their own; (3) Medicaid or Medicare for adults aged <65 years; (4) other public—including TRICARE, Veterans Affairs (VA), or Military, Alaska Native, Indian Health Service, or Tribal Health Services, or some other source; and (5) not insured at the time of interview.

Following the recommendations from the U.S. Preventive Services Task Force,[12] breast cancer screening was defined as women aged 50–74 years who had a mammogram within the past 2 years; cervical cancer screening as women aged 21–65 years with an intact uterus who had a Pap test within the past 3 years; and colorectal cancer screening as adults aged 50–75 years who had a high-sensitivity fecal occult blood test within the past year, or had a colonoscopy within the past 10 years, or had a combination of having a sigmoidoscopy within the past 5 years and a fecal occult blood test within the past 3 years.

Sociodemographic variables included age, sex, race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, and other), educational attainment (less than high school graduate, high school graduate/general education diploma, and greater than high school graduate), marital status (married, previously married [i.e., divorced, widowed, or separated], and never married or living with a partner), and federal poverty level (<100%, 100–199%, ≥200%, and unknown). Health-related behavioral risk factors included cigarette smoking status (current smoker, former smoker, and never smoked), leisure-time physical activity (yes/no), and routine checkup (yes/no). Chronic conditions/diseases included BMI (<25.0, 25.0–29.9, ≥30.0 kg/m^2, and unknown), physician-diagnosed diabetes (yes/no), and heart disease (yes/no).

Statistical Analysis

Participants who responded *don't know/not sure*, refused to answer, or had missing responses to any of the above study covariates were excluded from analysis. Weighted prevalence of cancer screenings were estimated by health insurance status and type of insurance coverage. Adjusted prevalence ratios with 95% CIs were estimated by conducting log-linear regression analyses with robust variance estimator while adjusting for study covariates. SAS, version 9.2 and SUDAAN software, version 10.0.1 were used to account for the multistage, complex sampling design.

RESULTS

Of 175,983 women aged 21–75 years and 79,633 men aged 50–75 years who resided in 42 states and DC, those who responded *don't know/not sure*, refused to answer, or had missing answers to any of the study covariates, insurance status variable, or the cancer screening variables were excluded, leaving 155,139 women and 67,034 men eligible for this study (Table 1). The majority of eligible participants were middle-aged (50–59 years), non-Hispanic white, and married, had more than a high school education, had an income of ≥200% the federal poverty level, were currently non-smokers and physically