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Q1 Cervical cancer screening among women ≥ 70 years of age in the 2 United States—A referral problem or patient choice

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A B S T R A C T

Clinical guidelines recommend that women with a history of adequate screening and not otherwise at high risk 14 may discontinue cervical cancer screening after 65 years of age. However, cervical cancer screening remains com- 15 mon among US women over 65 years old. To help understand why this practice is common in the US, we assessed 16 the relationship between receiving a recommendation for this test from a health care provider vs. self-referral and 17 undergoing this test. This cross-sectional study used data from 1752 female participants (70+ years) from the 18 2013 National Health Interview Survey (NHIS). Among female respondents, 40.8% had a Pap smear within the 19 past 3 years, 19.4% had a Pap smear in the last year, and 39.7% reported receiving a recommendation for a Pap 20 smear from their provider in the past year. Among women who received a recommendation to obtain a Pap 21 smear, 39.8% did so within the past 12 months compared to 5.9% of women who did not receive a recommendation 22 (adjusted odds ratio 10.5, 95% confidence interval 7.39–15.0). About 70% of women who visited an obstetrician/ 23 gynecologist and reported receiving a recommendation to have a Pap smear did so in the past year, while 32.3% 24 of women who visited an obstetrician/gynecologist but did not receive a recommendation obtained one. Pap 25 smears were common among women ≥ 70 years of age. Health care providers may need additional education on 26 current guidelines regarding indications for Pap smears in this age group to help reduce screening of patients 27 who may not benefit. 28

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34 Introduction

Q4 Cytology is recommended (Smith et al., 2015; U.S. Preventive 36 Services Task Force, 2015) and well-utilized (Sabatino et al., 2015; 37 Weinmann et al., 2015) in the United States (US) for the prevention of 38 cervical cancer. However, performing Papanicolaou (Pap) smears in 39 women ≥ 65 years of age has limited benefit, and can result in potential 40 harm from false positive results and subsequent invasive procedures 41 (Mandelblatt et al., 2002; Sawaya et al., 2000a,b; Van Wijngaarden 42 and Duncan, 1993). Since 2003, the US Preventive Services Task Force 43 (USPSTF) has recommended that women with a history of adequate 44 screening and not otherwise at high risk may discontinue cervical 45 cancer screening after 65 years of age (U.S. Preventive Services Task 46 Force, 2003). The American Cancer Society (ACS) also suggested in 47 2002 that cervical cancer screening could be discontinued at age 70 48 (Smith et al., 2002), and current ACS guidelines recommend that

screening stops at age 65 for women with adequate negative prior 49 screening and no history of cervical intraepithelial neoplasia (CIN) 2 50 or higher (Saslow et al., 2012; Smith et al., 2015). However, screening 51 continues to be common among US women over 65 years of age, even 52 among those with less than a 5-year life expectancy due to poor health 53 (Royce et al., 2014). 54

To design effective strategies which reduce the overutilization of 55 cervical cancer screening in the US, it is important to examine whether 56 overutilization stems more from health care providers' recommenda- 57 tions or patients' requests for services. There are few studies that have 58 quantitatively assessed the proportion of provider-recommended and 59 patient self-initiated Pap smears among US women. This study used 60 nationally-representative data from the National Health Interview 61 survey (NHIS) 2013 to provide an overall picture of Pap smear use 62 among US women ≥ 70 years of age and to examine whether provider 63 recommendation or patient choice is more important for screening 64 overutilization. 65

66 Methods

This cross-sectional study used data from the 2013 NHIS. NHIS data is 67 collected from a representative cross-sectional non-institutionalized sample to 68 assess the health status and behaviors of US adults. Health information was 69 collected through an annual, in-person household survey, and used a complex, 70

Abbreviations: ACS, American Cancer Society; CDC, Centers for Disease Control and Prevention; CIN, Cervical Intraepithelial Neoplasia; NHIS, National Health Interview survey; OB/GYN, Obstetrician/Gynecologist; Pap, Papanicolaou; USPSTF, US Preventive Services Task Force.

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stratified, multistage sample design to provide nationally representative data. Detailed information about the methodology can be found elsewhere (National Center for Health Statistics, 2014). Verbal consent for survey participation was provided by each subject. For this study, women ≥ 70 years of age were included, as we assessed screening use in the past 3 years and cervical cancer screening is recommended to stop at age 65 (Smith et al., 2015; U.S. Preventive Services Task Force, 2015). We excluded women with a prior hysterectomy ($n = 1324$), a history of cervical cancer ($n = 7$), those who had a Pap smear for a problem ($n = 25$), and those missing information on their most recent Pap smears ($n = 117$). After these exclusions, we included 1752 women ≥ 70 years of age in our analyses (Fig. 1).

We included the following sociodemographic information in our analyses: age in years, race (non-Hispanic white, non-Hispanic black, Hispanics, and others), immigration status (born in US, in US <10 years, and in US $10+$ years), region of residence (northeast, Midwest, south, and west), marital status (married/living with partner, widowed/divorced/separated, and single), education level ($<$ high school, high school, and $>$ high school), and family income to poverty threshold ratio (<1 , $1-3$, and >3). Family income to poverty threshold ratio is a ratio of the family's income to the appropriate federal poverty threshold. Health insurance coverage (public, private, and none) and whether the participant reported a usual place of health care (yes, and no) were used to determine access to health care. Those who listed the emergency room as their usual place where they received health care were considered to have no usual source of care. We also included whether women had visited an obstetrician/gynecologist (OB/GYN) in the past year. Smoking status was classed into current smoker, past smoker, and never smoker.

Female participants were asked whether they ever had a Pap smear; those who responded yes were asked additional questions about the timing of their most recent Pap smear. This information was recoded using the NHIS 2000 method by combining information available on month/year, days/weeks/months/years of the exam, the original time interval grouping, and the interview date (National Center for Health Statistics, 2002). In addition, the survey asked women whether they had received recommendations for Pap smears from their doctors within the past year. If a woman did not receive a doctor's recommendation for Pap smear but obtained one in the past year, that woman was classified as having initiated screening herself.

Statistical analysis

We examined the weighted prevalence of reported Pap smears within the past 3 years, within the past 2 years, and in the past year to get an overall picture of screening among women ≥ 70 years of age. To investigate the role of providers and patients in the initiation of cervical

cancer screening, we also assessed the proportion of women who stated they received recommendations for cervical cancer screening from their doctors in the past 12 months, the prevalence of Pap smears among women who reported a provider recommendation, and the prevalence of reported provider recommendations among women who had a Pap smear. All analyses of NHIS data were weighted to account for differential probabilities of selection and the complex sample design following NHIS analytic guidelines (National Center for Health Statistics, 2014). Sample weights of final annual person weights were incorporated in all analyses to account for non-response and post stratification adjustment (age–sex–race/ethnicity adjustment to 2010 Census population Control totals). Standard errors were calculated using Taylor series linearization. Multivariate logistic regression models were used to assess differences in screening use, recommendation received, and Pap smear prevalence by recommendation status. Variables that were controlled for included age, race/ethnicity, education level, and income level. Statistical analyses were conducted using SAS software version 9.4 (SAS Institute; Carey, NC). A 2-sided p value <0.05 was considered statistically significant.

Results

Among the 1752 US women ≥ 70 years of age in our sample, 35.1% were 70–74 years old, 29.4% were 75–80 years old, and 35.5% were >80 years of age (Table 1). Only 0.7% of these women had been in the US <10 years, 4.1% were single, 0.7% did not have any health insurance coverage, 3.1% did not have a usual place of care, 16% visited an OB/GYN in the past year, and 5.8% were current smokers.

Among the women in this sample, 40.8% reported having had a Pap smear within the past 3 years, 32.5% reported a Pap smear within the past 2 years, and 19.4% reported a Pap smear in the past 12 months (Table 1). Pap smear use decreased with age ($p < 0.001$ for trend), with 59.2% of 70–74 year old women and 23% of those >80 years of age reporting having had a Pap smear in the past 3 years. Pap smear use in the past year did not differ across racial/ethnic groups. Women who visited an OB/GYN in the past year reported higher Pap test use than those who did not (56.1% vs 12.3%, $p < 0.001$).

In the past year, 39.7% of women stated that they received recommendations for Pap smears from their doctors (Table 2). The proportion of women who got a Pap smear recommendation decreased with age

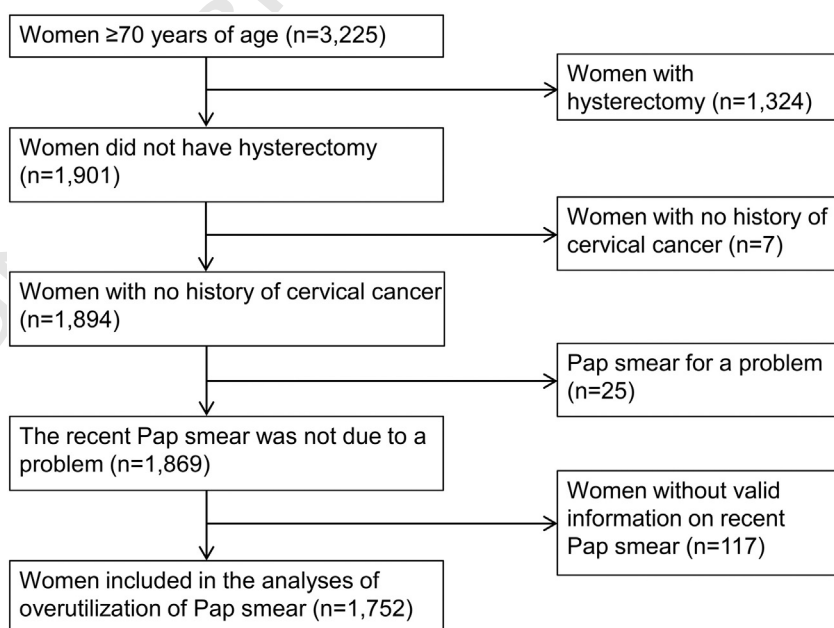


Fig. 1. Flowchart of the numbers of participants included in the analyses of cervical cancer screening among women ≥ 70 years of age in NHIS 2013. NHIS: National Health Interview Survey

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