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Smoking Cessation Efforts Among WISEWOMAN Program Participants, 2014–2018

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Abstract

Smoking is a preventable risk factor for cardiovascular disease (CVD), indicating the importance of smoking cessation. The Centers for Disease Control and Prevention's Well-Integrated Screening and Evaluation for WOMen Across the Nation (WISEWOMAN) Program funded 21 recipients to provide preventative health services, including healthy behavior support services, to low-income, uninsured, or underinsured women, between 40 to 64 years of age, aimed at lowering CVD risk for women from January 2014 to June 2018. This article explores WISEWOMAN's smoking prevalence and smoking cessation efforts. Analyses were conducted to assess smoking status and other CVD risk factors among 71,671 unique women from all 21 WISEWOMAN funded recipients. Information on CVD risk factors, including smoking status, were collected. Women who were identified as currently smoking during their initial visit were referred to smoking cessation services and their smoking status was revisited during their rescreening. The overall smoking cessation prevalence was 16.9% during the funding cycle. This small increase from the previous iteration of WISEWOMAN (14.9%), supports WISEWOMAN's continued emphasis on smoking cessation through community-clinical linkages. The distribution of smoking cessation did vary by race and ethnicity ($p < 0.001$). Hispanic women had a higher smoking cessation (38.1%) compared to non-Hispanic American Indian/Alaska Native, non-Hispanic Black, and non-Hispanic White women (17.4%, 15.1%, and 13.7% respectively). In the next iteration of the WISEWOMAN Program, it is anticipated that continued emphasis will be placed on achieving health equity among women who smoke, to reduce CVD risk.

Keywords

smoking cessation; WISEWOMAN; CVD

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention, the U.S. Department of Health and Human Services, or the U.S. government.

Introduction

IN 2019, A TOTAL OF 420,812 women in the United States died from cardiovascular disease (CVD).¹ CVD is the leading cause of death in the United States. Moreover, smoking is a leading cause of preventable death in the United States, with cigarette smoking responsible for >480,000 deaths nationwide every year and, in 2019, nearly 13 of every 100 adult women currently smoked cigarettes.^{2,3} In the United States, more than half of women who smoked cigarettes (55.6%) reported making an attempt to quit smoking; however, only 8.1% of women successfully quit smoking.⁴ The Centers for Disease Control and Prevention (CDC)'s Well-Integrated Screening and Evaluation for WOMen Across the Nation (WISEWOMAN) Program was authorized by Congress in 1993 to extend services provided to women as part of the National Breast and Cervical Cancer Early Detection Program (NBCCEDP). Eligible states, tribes, and territories may apply to the WISEWOMAN Program for a specified funding cycle. Since 1995, the WISEWOMAN Program has gone through multiple program iterations through several competitive funding opportunities known as cooperative agreements.

The WISEWOMAN Program provides preventative health services to low-income, uninsured, and underinsured women in the priority age range of 40–64 years who are eligible for NBCCEDP. A few WISEWOMAN funded recipients provide services to women outside the 40–64 age range. The preventative health services include clinical assessments of CVD risk factors and referrals to healthy behavior support services such as lifestyle programs, health coaching, and community-based resources that address CVD risk factors and support healthy lifestyle changes, including smoking cessation.

All WISEWOMAN participants who identified as currently smoking were advised to quit; referrals were made for women willing to accept smoking cessation services as a primary focus of intervention to reduce their CVD risk.^{5,6} State-based quitlines were embedded among smoking cessation services that participants were referred to alongside other smoking cessation services found in their communities.

In addition to smoking cessation services and resources, the WISEWOMAN Program incorporates evidence-based strategies toward smoking cessation including the 5-As intervention as outlined in the Public Health Service Clinical Practice Guideline for Treating Tobacco Use and Dependence (2008).⁷ The 5-As consists of five sequential steps, Ask, Advise, Assess, Assist, and Arrange, for provision of a clinical cessation intervention. “Assist” and “Arrange” can include establishing connections between clinical health systems and resources in their surrounding communities to support successful cessation.^{7,8} In addition, CDC's Best Practices for Comprehensive Tobacco Control Programs, an evidence-based guide that aids in the implementation and maintenance of state tobacco programs, highlights this approach as a smoking cessation intervention, and outlines leadership and coordination of efforts related to state policies, laws, and regulations toward strategic implementation of effective community programs.⁹ This intervention for smoking cessation is advocated by the Agency for Healthcare Research and Quality as well as the WISEWOMAN Program.

Using the 5-As intervention, participants identified as currently smoking are counseled in an individually tailored manner and then encouraged to quit smoking by a health care practitioner or treatment extender such as a community health worker, pharmacist, or social worker. This highlights community–clinical linkages aligning clinical and community services to promote effectiveness of smoking cessation interventions and serving participants. These individual counseling sessions include assessing an individual who smoke’s willingness to make a quit attempt, encouraging a quit attempt, offering assistance with quitting smoking, problem solving, and providing motivation to quit.

The purpose of this study was to examine the smoking prevalence and smoking cessation efforts in the WISEWOMAN population during January 2014 to June 2018 and contrast smoking cessation rates from this period to the previous funding cycle of the WISEWOMAN Program (June 2008 to July 2013).

Materials and Methods

The WISEWOMAN Program conducted cardiovascular health screenings on eligible women from 19 States and 2 Tribal Organizations (21 funded recipients) for the funding cycle between January 2014 to June 2018, representing cooperative agreement DP13–1302. Data were stratified by smoking status at initial screening. If a woman answered “*current smoker*” to the question: “*Do you smoke? Includes cigarettes, pipes, or cigars (smoked tobacco in any form),*” she was considered to have self-identified as currently smoking. Additional response options were *Quit (1–12 months ago)*, *Quit (more than 12 months ago)*, and *Never smoked*. Participants who self-identified as either quit options were considered to have formerly smoked. The WISEWOMAN program defines smoking cessation as a woman who self-identified as currently smoking at her initial screening and self-identified as formerly smoking at her last screening. Smoking cessation was calculated among women who were currently smoking at their initial screening and had at least one additional screening during the funding cycle. Women were guided to return for an additional screening between 11 and 18 months as per the WISEWOMAN Program Model.¹⁰ In addition, smoking cessation was categorized by CVD risk factors taken at each screening visit: blood pressure, total cholesterol levels, and blood glucose level. These CVD risk factors had three categories, which are defined in the footnotes of Table 2: normal, precondition, and condition. Women were categorized into five age groups: <30, 30–39, 40–49, 50–64, and >64 years. Analyses explored smoking cessation by race and ethnicity (Hispanic, non-Hispanic White, non-Hispanic Black, and non-Hispanic American Indian/Alaska Native). Asian and Native Hawaiian/Other Pacific Islanders were excluded from analyses because they represented small sample sizes and a lack of statistical power. Analyses also included categorizing referrals made to healthy behavior support services into three groups: no referrals, one referral, and two or more referrals. Chi square analyses were conducted to determine statistical significance in distributions ($p < 0.05$). Finally, a test of proportions was used to determine statistical significance between smoking cessation in this funding cycle (January 2014 to June 2018) and smoking cessation in the previous iteration (July 2008 to June 2013). All analyses were calculated using SAS version 9.4.¹¹ CDC previously determined that WISEWOMAN is a public health practice program and does not conduct human subject research.

Results

A total of 101,018 cardiovascular health screenings were provided to 71,671 unique women during January 2014 to June 2018. Among the 15,596 (21.8%) women who self-identified as currently smoking at their initial screening, 3,697 (23.7%) had an additional screening at any time during the funding cycle. Throughout this iteration, the 3,697 women received 4,190 referrals to healthy behavior support services. The rate of smoking cessation was 16.9% among women who were currently smoking at their initial screening.

When analyzing current smoking status at the initial screening by race and ethnicity, a significant distribution emerged where 39.1% of non-Hispanic American Indian/Alaska Native women currently smoked, 35.4% of non-Hispanic White women currently smoked, 23.8% of non-Hispanic Black women currently smoked, and 5.0% of Hispanic women currently smoked ($p < 0.001$) (Table 1). Smoking cessation did not vary by age group. However, Hispanic women had significantly greater ($p < 0.001$) smoking cessation (38.1%) compared with non-Hispanic American Indian/Alaska Native, non-Hispanic Black, and non-Hispanic White women (17.4%, 15.1%, and 13.7%, respectively) (Table 2). Smoking cessation did not vary by CVD risk factor status (hypertension, high cholesterol, and diabetes) (Table 2). Finally, a statistically significant higher rate of smoking cessation ($p < 0.01$) was observed in the studied iteration (January 2014 to June 2018) of WISEWOMAN in contrast to the previous iteration of WISEWOMAN (Supplementary Table S1).

Discussion

Smoking prevalence for participants of the WISEWOMAN Program was 21.8% at their initial screening. Among women who received an additional screening between January 2014 and June 2018, a smoking cessation prevalence of 16.9% was observed. Hispanic women had the highest prevalence of smoking cessation among all WISEWOMAN participants. Moreover, non-Hispanic American Indian/Alaska Native women and non-Hispanic Black women had higher prevalence of smoking cessation than that of non-Hispanic White women. WISEWOMAN data and national surveys are methodologically different, so statistical testing and comparisons cannot be performed. The results presented may indicate a positive impact of WISEWOMAN's smoking cessation interventions that are culturally tailored to meet the needs of specific populations.

The WISEWOMAN Program provided technical assistance to funded recipients to improve access to smoking cessation services for women and create supportive environments that are culturally sensitive. Moreover, there are some identified barriers that impede the success of smoking cessation among these populations such as cost of treatment, lack of expertise by medical providers, linguistic and cultural barriers, as well as healthy literacy, scheduling, and transportation.^{4,12} WISEWOMAN Program's emphasis on implementing evidence-based practice, such as ensuring all women who smoked be advised to quit and referred to smoking cessation services and addressing identified barriers, was a factor in success.¹⁰

Risk reduction counseling is one focus of the WISEWOMAN Program centered around the participant. In conjunction with motivational interviewing, risk reduction counseling is designed to help a woman become an effective and informed manager of her health. This important process of risk reduction counseling helps identify women who are ready to quit smoking and discuss their next steps in the referral process. This is because referrals to those participants who are actively ready to quit smoking may be prioritized for rapid receipt of smoking cessation services.

Moreover, the risk reduction counseling also provides an opportunity for women who are not yet ready to quit smoking to discuss any barriers and challenges to smoking cessation. During this session, motivational interviewing is used to help women identify and act upon their personal priorities, and it may become apparent that while some women are ready to quit, others may not be ready to quit smoking. It should be noted that some participants were not interested in quitting. For example, 16% of women were not ready to participate in any healthy behavior support services provided by the WISEWOMAN program intended to aid and support smoking cessation (Table 2). In addition, technical assistance was provided to funded recipients with a low percentage of women who received a referral. Moreover, some of these funded recipients increased their efforts by enhancing risk reduction counseling to motivate these women who are not ready to quit.

Additional smoking cessation approaches beyond risk reduction counseling used by the WISEWOMAN Program rely on partnering with clinicians in health care systems with established referral mechanisms. First, by utilizing e-referrals to a quitline from electronic health records, these referral mechanisms and partnerships showcase an enhanced collaboration between public health efforts and health systems approaches to smoking cessation. Second, quitline services through phone included access to smoking cessation aids to WISEWOMAN participants. These referrals were at times bidirectional, providing information to the clinician about changes in smoking status. Finally, some funded recipients made smoking cessation services available on-site or close to the clinic. These various approaches allowed funded recipients to readily engage participants who were ready to quit smoking that could have impacted the success of smoking cessation.

The WISEWOMAN Program places great emphasis on services being provided in culturally and linguistically appropriate ways, as well as, providing access to culturally appropriate lifestyle programs, health coaching, and refer participants to other community-based resources. The WISEWOMAN Program encouraged funded recipients to provide support for women needing assistance owing to health literacy, linguistic, cultural, or other barriers. In the cases where quitlines or other smoking cessation services did not address language and other cultural barriers, the WISEWOMAN Program allowed for financial resources to be directed toward other healthy behavior support services that meet participants' needs by being culturally and linguistically appropriate.

By placing importance on culturally relevant and linguistically appropriate resources, the WISEWOMAN Program could have increased the availability of and access to resources for women who may otherwise not have had these resources readily available to them. Although a direct relationship between culturally relevant and linguistically appropriate resources, and

smoking cessation may not have been apparent, this relationship may have complemented these observations seen in the WISEWOMAN Program.

Emphasis placed on smoking cessation through technical assistance provided to funded recipients may have helped participants stop smoking. At the beginning of the funding cycle, some of these funded recipients had difficulty applying program guidance toward smoking cessation; however, as the funding cycle progressed, elements of technical assistance related to smoking cessation were implemented. These smoking cessation-related implementations included health care professional training, sharing of technical assistance resources, and information needed for coordinated and strategic implementation of effective community programs.

In addition, technical assistance on smoking cessation was also provided to funded recipients focused on health care practitioners discussing these key points: (1) advising health care practitioners to discuss smoking cessation with each woman (who smoked) during risk reduction counseling, (2) providing professional development for health care practitioners so that the 5-As intervention was used with every woman at each clinical visit, and (3) if a woman was willing to quit, health care practitioners subsequently referred her to a quitline or other smoking cessation services in her community. All in all, the implementation of the evidence-based 5-As intervention guides the WISEWOMAN Program's smoking cessation efforts.

Beyond the smoking cessation services offered by the WISEWOMAN Program, other broadly available smoking cessation resources were concurrent in the public environment. Other CDC smoking cessation resources included compilations of current Best Practices for Comprehensive Tobacco Control Programs, which provides guidance to states,⁹ and CDC's *Tips From Former Smokers*[®] media campaign, which shows real people living with serious long-term health effects from smoking.¹³ CDC estimates that between 2012 and 2018, >16.4 million people who smoke have attempted to quit, and ~1 million had successfully quit smoking because of the *Tips* campaign.¹³

This smoking cessation prevalence of 16.9% was higher than the 14.9% found during the previous iteration of the WISEWOMAN Program (July 2008 to June 2013).⁶ WISEWOMAN cooperative agreements are competitive, therefore, funded recipients varied. Addressing smoking cessation was an integral component at the inception of the cooperative agreement featured in this article, whereas it became a focus of the previous iteration during its second year. This increased emphasis on smoking cessation in the WISEWOMAN Program may explain the slight increase in prevalence from the previous iteration.

Limitations

Several limitations exist within this report. First, data regarding participant engagement with the smoking cessation services were not readily available in all cases for each recipient. This may be because some WISEWOMAN-funded recipients were unable to receive information back from their state quitline. Second, this study was reflective of a public health practice program, where not all women returned for an additional screening, which could bias the results. Women participating in the WISEWOMAN Program are low income, uninsured,

and underinsured, and some face considerable personal challenges that may inhibit their participation in the program. Third, some women may have lost eligibility for the program during the funding cycle by obtaining health insurance or aging out of the WISEWOMAN Program. Finally, smoking status was self-reported, which may be subject to recall bias or by participants wanting to provide a socially desirable response, which may lead to an overestimate of the smoking cessation rate.¹⁴

Conclusions

Smoking continues to be a major preventable risk factor for CVD; smoking cessation reduces CVD risk underscoring the importance of smoking cessation activities.⁴ These analyses demonstrated that the WISEWOMAN Program achieved smoking cessation for 16.9% of women who had accepted referrals services to healthy behavior support services including smoking cessation efforts and had an additional screening. This smoking cessation rate, although a small increase from the previous iteration of WISEWOMAN (14.9%), supports WISEWOMAN's emphasis on smoking cessation through community-clinical linkages by utilizing the 5-As intervention.⁶ The distribution of smoking cessation did vary by race and ethnicity, where Hispanic women had a higher smoking cessation which speaks to WISEWOMAN's culturally tailored smoking cessation interventions.

In the next iteration of the WISEWOMAN Program (September 2018 to September 2023), it is anticipated that continued emphasis and additional efforts will be placed on smoking cessation to reduce risk for CVD among women who smoke. These efforts may focus on increasing referrals to healthy behavior support services including smoking cessation resources and ensuring women are continuously engaged in improving their own health. Moreover, these additional efforts may include, but will not be limited to, tailored and intensive technical assistance to funded recipients with low referral rates to healthy behavior support services including smoking cessation resources, increased use of community health workers interacting with participants, and enhancing the motivational interviewing skill set of clinical practitioners. Finally, an overarching framework of the next iteration of the WISEWOMAN Program will focus on achieving health equity among women who smoke, to reduce CVD risk.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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SMOKING STATUS AT THE INITIAL SCREENING BY AGE AND RACE AND ETHNICITY AMONG WELL-INTEGRATED SCREENING AND EVALUATION FOR WOMEN ACROSS THE NATION PARTICIPANTS

TABLE 1.

<i>Characteristics at initial screening</i>	<i>Population</i>	<i>Current smoking</i>	<i>Smoking rate (%)</i>	<i>p^a</i>
Race and ethnicity				
Non-Hispanic American Indian or Alaska Native	4,863	1,902	39.1	<0.001
Non-Hispanic Black	10,191	2,422	23.8	
Non-Hispanic White	27,759	9,831	35.4	
Hispanic	28,858	1,441	5.0	
Age ^b				<0.001
<30 years	11	2	18.2	
30–39 years	2,932	820	28.0	
40–49 years	30,642	6,155	20.1	
50–64 years	37,646	8,584	22.8	
Over 6 years	317	15	4.7	
Total	71,671	15,596	21.8	

January 2014 to June 2018.

^a Chi square test of the association between *Characteristics* and *Smoking Rate*. Bolded values denote significance ($p < 0.05$).

^b A total of 123 women were missing information on *Age*.

TABLE 2. SMOKING CESSATION BY DEMOGRAPHIC CHARACTERISTICS AND CARDIOVASCULAR DISEASE RISK FACTORS AMONG WELL-INTEGRATED SCREENING AND EVALUATION FOR WOMEN ACROSS THE NATION PARTICIPANTS RECEIVING MULTIPLE SCREENINGS

Demographics and CVD risk factor categories at initial screening	Quit smoking	Continued smoking	Total with 2 screenings	Smoking cessation (%)	p-value ^d
Total	626	3,071	3,697	16.9	—
Age group ^b					0.170
30–39 years	33	135	168	19.6	
40–49 years	213	1,158	1,371	15.5	
50–64 years	379	1,769	2,148	17.6	
Race and ethnicity					<0.001
Non-Hispanic American Indian or Alaska Native	119	566	685	17.4	
Non-Hispanic Black	76	426	502	15.1	
Non-Hispanic White	294	1,856	2,150	13.7	
Hispanic	137	223	360	38.1	
Blood pressure status ^c					0.155
Normal	210	975	1,185	17.7	
Prehypertensive	183	824	1,007	18.2	
Hypertensive	233	1,264	1,497	15.6	
Cholesterol status ^d					0.459
Normal	242	1,264	1,506	16.1	
Borderline	182	843	1,025	17.8	
High	187	869	1,056	17.7	
Diabetes status ^e					0.242
Normal	315	1,558	1,873	16.8	
Prediabetes	176	831	1,007	17.5	
Diabetes	85	366	451	18.9	
No. of referrals for unique women					0.773
0	173	898	1,071	16.2	
1	239	1,184	1,423	16.8	
2 or more	214	989	1,203	17.8	

January 2014 to June 2018.

^a Chi square test of the association between demographics/CVD risk factor categories and smoking cessation rate. Bolded values denote significance ($p < 0.05$).

^b Age group: Information was missing for 10 participants.

^c Hypertensive status: normal: average systolic blood pressure <120mmHg and diastolic blood pressure <80 mmHg; prehypertension: average systolic blood pressure between 120 and 139mmHg or average diastolic blood pressure between 80 and 89 mmHg; hypertension: average systolic blood pressure >139 mmHg, or average diastolic blood pressure >89 mmHg, or taking medication for high blood pressure. Information was missing for eight participants.

^d Cholesterol status: normal: total cholesterol (fasting/nonfasting) <200 mg/dL; borderline high cholesterol (fasting/nonfasting) between 200 and 239 mg/dL, high cholesterol: total cholesterol (fasting/non-fasting) >239 mg/dL or taking medication for high cholesterol. Information was missing for 111 participants.

^e Diabetes status: normal: fasting glucose <100 mg/dL and A1c <5.7%; prediabetes: fasting glucose between 100 and 125 mg/dL or A1c between 5.7% and 6.4%; diabetes: fasting glucose >125 mg/dL, or A1c ≥6.5%, or history of diabetes, or taking medication for diabetes. Information was missing for 369 participants.

CVD, cardiovascular disease.