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The Impact of Farm Lifestyle and Health Characteristics

Cervical Cancer Screening Among Southern Farmwomen

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- ***Background:*** Rural residence, access to healthcare facilities, and multiple roles of farmwomen may pose barriers to cervical cancer screening among women living in southern farm states.
- ***Objectives:*** To compare the proportion of women failing to obtain cervical cancer screening in three Southern states to state-level Behavioral Risk Factor Surveillance System (BRFSS) data and to identify factors contributing to cervical cancer screening and detection behaviors.
- ***Methods:*** A cross-sectional study design was used. Data were collected using several Farm Family Health and Injury Prevention surveys via telephone interviews in three southern states. Farmwomen (N = 2,324) from three states comprised the sample on Pap testing.
  Data were used from summary reports of the BRFSS for each state to compare the proportion of farmwomen ≥18 years of age who had failed to obtain a Pap test within the past 3 years to failure to obtain Pap tests statewide. Multiple logistic regression analyses were conducted to examine the predictors of failure to obtain early screening.
- ***Results:*** Pap testing did not meet *Healthy People 2010* target goal of 90%. Farm lifestyle predicting failure to obtain cervical cancer screening included having a house on the farm and engaging in no off-farm work and minimal involvement in farm tasks. The risk of failing to obtain Pap testing increased with age and decreased with education. The only health access variable contributing to failure to obtain Pap testing was *women with no insurance*. Positive preventive risk factors contributing to compliance with up-to-date status were previous mammogram and previous breast exam. Being married was a positive risk factor.
- ***Discussion:*** Although the failure to obtain Pap testing in Texas was comparable to state BRFSS rates, failure to obtain Pap testing rates in Kentucky and Louisiana were at least 6% greater for farmwomen than women living in the state. Farmwomen, a subgroup of the rural population, have unique barriers to obtaining screening services. Geographical isolation and minimal role involvement on the farm may contribute to the likelihood that women are not seeking cervical cancer screening.

- ***Key Words:*** cervical cancer screening · farmwomen · occupational health

Rural women face substantial access barriers to healthcare. Unlike their urban counterparts, rural populations are generally older, poorer, lack insurance, and have lower levels of education (United States Department of Health and Human Services [USDHHS], 2000). There are fewer physicians in rural communities. Travel time to healthcare providers is often greater and public transportation is less available. Less preventive service utilization is documented in rural areas, and without health insurance coverage, rural women are less likely to utilize preventive services (Faulkner & Schauffler, 1997; Strickland & Strickland, 1996).

In addition to geographic isolation, multiple work roles and responsibilities may pose barriers to cancer screening among farmwomen. Actual work practices of farmwomen vary by age and farm enterprise (Keating & Munro, 1988; Rosenfeld, 1985; United States Department of Agriculture, 1987). Many women also choose to work "off-farm" by working part-time or full-time nonfarming jobs to pay for insurance and to maintain the viability of the farm. Farmwomen tend to underestimate their contributions to the farming operation, often referring to themselves as homemakers when in reality they participate in multiple management and labor issues, and engage in hands-on farm tasks (Reed, Westneat, Browning, & Skarke, 1999).

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There is little published information about cervical screening rates among farmwomen, a subgroup of the rural population.

Early detection of cervical cancer is a major public health priority. The American Cancer Society estimates there will be approximately 10,370 new cases of cervical cancer (ACS, 2005). Early detection of cervical cancer by Pap smear testing has been shown to reduce mortality, and yet the American Cancer Society predicts that approximately 3,710 women will die from this disease. (ACS; Smith, Cokkinides & Eyre, 2005). Many women do not realize they are at risk of developing cervical cancer as they age. According to the 1996 National Institutes of Health Consensus Panel on Cervical Cancer, women ages 65 years and older account for nearly 25% of all diagnosed cervical cancer cases and 41% of cervical cancer deaths in the United States (ACS). The diagnosis of cervical cancer most often occurs in women between the ages of 18 and 44 years who are above poverty status, living in the south region of the United States (Pleis & Coles, 2003). Results from numerous studies show that although most cases of cervical cancer occur among younger women, older women are at greater risk of death (ACS; Remington, Lantz, & Phillips, 1990). By the time of diagnosis, older women are more likely to have cervical cancer cells metastasize to other areas.

To achieve maximum public health benefit from community-based cervical cancer programs, the ACS recently published updated cervical cancer screening guidelines (Saslow et al., 2002). The majority of age-eligible women in the community must undergo both baseline and rescreening every 2–3 years until age 30, at which time, rescreening may be performed less often (i.e., every 3 years) if three previous Pap tests show normal results (Saslow et al., 2002). Women aged 70 years and older with an intact cervix and who have had three or more normal Pap tests within a 10-year period can stop Pap testing. There has been some disagreement about the age at which routine screening should begin, but all major advisory groups emphasize that rescreening of age-eligible women is essential.

Although researchers often address the health disparity between urban and rural populations, very little is known about the preventive health patterns of farmwomen, a specific subgroup of the rural community. Even less is known about the predictors of rescreening. Beckmann, Beckman, Lipscomb, King, and Steere (1995) found the strongest factor associated with Pap testing compliance to be abnormal previous test results. In a study of 323 women being cared for in a public postpartum clinic, they found that 18% of those with normal Pap tests and 41% with abnormal results comply with follow-up care. In one of the few studies that focus specifically on farm families, Rowland and Lyons (1989) found those with lower incomes and no health insurance were less likely to visit physicians than their upper-income counterparts. Distance to medical facilities, lack of insurance for prevention, lack of perceived need, and inadequate provider–client relationships are other barriers to the utilization of cancer screening services (Burnett, Steakley, & Tefft, 1995). In a study that compared farmwomen to nonfarm-resident women, McCarty et al. (2003) reported that Wisconsin farmwomen were less likely to have Pap tests at recommended time intervals compared to nonfarmwomen.

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Compared to other countries, cervical cancer incidence is drastically lower in the United States. Mortality rates, however, remain high worldwide, largely due to poor screening practices. Screening for cervical cancer has been widely accepted as beneficial in reducing mortality, especially for those at high risk (Centers for Disease Control and Prevention 1996, 1999). Despite widely recognized recommendations for women of all ages, segments of the general population still are not being screened according to these guidelines. Although there is consensus that rural women do not engage in preventive services as often as their urban counterparts (Calle, Flanders, Thun, & Martin, 1993), at-risk subgroups among rural women have yet to be identified. Farmwomen are a unique subgroup of the rural community because they engage in the *third-shift* phenomenon in which they attempt to balance home, employment away from the farm, and farm work (Gallagher & Delworth, 1993). The purposes of this study were to determine the rate of failure to obtain Pap tests among farmwomen in three Southern states and to identify risk factors associated with failure to obtain cervical cancer screening. A secondary purpose was to examine health risks associated with failure to obtain Pap tests by comparing survey failure rates to state-level data using data from the Behavioral Risk Factor Surveillance System (BRFSS).

Methods

This population-based, cross-sectional survey design study included women 18 years old and older participating in the work on the family farming operation in three Southern states. In each of these regions, federally funded National Institute for Occupational Safety and Health agricultural research centers exist. Baseline data were collected similarly in each state to be used for analysis and to establish a need for outreach services. The Kentucky Farm Family Health and Hazard Surveillance Project investigators queried 992 farmwomen in 60 Kentucky counties about their Pap testing history (response rate = 85%). Two replication studies followed: The Texas Farm Women's Survey researchers asked identical questions of 665 farmwomen in five counties in Texas (response rate = 51%) and the Louisiana Farm Family Injury Prevention and Health Initiative (LAFFIP + HI) researchers asked identical questions of 667 farmwomen in 10 parishes of the Southeast region (response rate = 57.6%). This study was approved by each university's institutional review board.

TABLE 1. Demographics and Univariate Odds Ratios for Potential Explanatory Variables for Failure to Obtain Pap Test (N = 2,314)

Characteristic	*N*	%	OR	95% CI
Location				
Kentucky	992	42.9	–	–
Texas	665	28.7	–	–
Louisiana	667	28.3	–	–
Education				
<High School	407	17.6	3.69	2.85–4.78
High School	910	39.3	1.86	1.49–2.32
>High School	997	43.1	1.0	–
Marital status				
Married	2,124	91.8	0.36	0.27–0.49
Not married	190	8.2	–	
Ethnic background				
White	2,239	96.8	0.79	0.47–1.33
Other	71	3.1	–	
Missing	4	0.2		
Age				
18–35	196	8.5	1.0	
36–50	695	30.2	1.82	1.08–3.08
51–65	874	37.8	3.41	2.05–5.66
>65	547	23.6	7.18	4.29–11.99
Missing	2	0.10		
Location of home				
On farm	1,864	80.6	1.79	1.37–2.33
Off farm	450	19.4	–	
Work status				
Full-time off-farm work	681	29.4	–	–
Part-time off-farm work	245	10.6	–	–
Farm homemaker	1,388	60.0	–	–
Farm responsibility				
Run errands	1,939	83.8	–	–
Pay farm bills	1,812	78.3	–	–
Work with farm animals	1,411	61.0	–	–
Order supplies	1,354	58.5	–	–
Prepare farm income tax	1,118	48.3	–	–
Attend farm meetings	1,051	45.5	–	–
Mow fields	906	39.2	–	–
Haul goods to market	863	37.3	–	–
Apply pesticides	856	37.0	–	–
Haul animals to market	819	35.4	–	–
Repair farm machinery	819	35.4	–	–
Rake hay	779	33.7	–	–
Drive a tractor	701	30.3	–	–
Operate combine	574	24.9	–	–
Role load				
Off-farm work and 11–18 tasks	157	6.8	1.00	–
Off-farm work and 7–10 tasks	137	5.9	1.53	0.81–2.89
Off-farm work and <7 tasks	632	27.3	1.37	0.82–2.28
No off-farm work and 11–18 tasks	370	16.0	2.33	1.38–3.94
No off-farm work and 7–10 tasks	252	10.9	2.64	1.53–4.54
No off-farm work and <7 tasks	766	33.1	3.69	2.25–6.03
Healthcare access				
Time to healthcare facility				
1–29 minutes	1,533	66.2	1.0	–
30–59 minutes	592	25.6	1.24	1.00–1.54
1 or more hours	161	7.0	1.11	0.76–1.61
Missing	28	1.2		
Insurance				
None	236	10.2	1.66	1.24–2.22
Medicaid	13	0.6	2.93	0.98–8.76
Medicare	108	4.7	3.68	2.49–5.4
Group/private	1,957	84.6	1.0	–
Preventive health behavior				
Ever had mammogram	1,954	84.4	0.35	0.28–0.44
Ever had breast exam	2,145	92.7	0.27	0.19–0.37
Never smoked in lifetime	1,609	69.5	1.0	–
Smoked and since quit	376	16.3	0.94	0.72–1.22
Smoke now	324	14.3	1.20	0.92–1.57

Information was elicited about potential explanatory factors of Pap testing such as prevention health behaviors, healthcare access, and demographic information. Standard questions from the National Health Interview Survey were used extensively in the development of the survey (Massey, Moore, Parsons, & Tadros, 1989). The survey questions specific to farming were developed from review of literature and previous work of Garkovich (1985). Questions on work roles, characteristics of the farm, and demographics of farmwomen were included in the survey for all three state surveys.

Details regarding the sampling design for Kentucky are provided elsewhere (Browning, Truszczynska, & Reed, 1998). A simple random sample was selected from farm households within each county in Kentucky and a stratified random sample was selected of one woman from the household to serve as the study respondent in Texas and Louisiana. Proportional allocation of the participating counties or parishes was used to provide representative participation in keeping with population density (Lunsford & Lunsford, 1995). Telephone interviews proceeded in two stages following the sampling selection. The first stage determined household eligibility. Households were coded

as ineligible in the event a member no longer farmed or in the event no woman was in the household. In the event two women were engaged in farming operations, the woman most involved was selected and asked to participate. Data among three states were compared to examine participation in cervical screening tests and to identify factors associated with participation.

Variables

The age groups were divided so that groups were consistent with data reported by the state-level BRFSS and could be examined separately. The BRFSS is a unique, state-based surveillance system active in all 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. Clinical preventive health practices, including prevalence data on Pap testing, are available for adults from each state. Location of farm house, on-farm or off-farm, was used to evaluate nearness to a family-owned work site. The variable *farm-related role load* was created by recategorizing work status and involvement of various farm tasks (range 0–18 tasks) into six categories (see Table 1). In general, role load among farmwomen ranged from off-farm work and greatest number of farm tasks to no off-farm work and very little involvement in farm tasks. Specifically, role load was categorized as (a) off-farm work and 11–18 types of tasks, (b) off-farm work and 7–10 types of tasks, (c) off-farm work and <7 types of tasks, (d) no off-farm work and 11–18 type of tasks, (e) no off-farm work and 7–10 types of tasks, and (f) no off-farm work and <7 types of tasks. Healthcare access was evaluated with two variables, time to usual healthcare facility, and health coverage. Distance to usual healthcare facility was grouped as 1–29 minutes, 30–59 minutes, and greater than 60 minutes. The four levels of healthcare coverage

TABLE 2. Magnitude of the Failure to Obtain Pap Smear Within Past 3 Years by Location and Select Characteristics

	Kentucky		Louisiana		Texas	
Characteristics	FFHHSP[a] *n* (%) [95% CI]	BRFSS*† *n* (%) [95% CI]	LaFFIP + HI[b] *n* (%) [95% CI]	BRFSS*† *n* (%) [95% CI]	TFWS[c] *n* (%) [95% CI]	BRFSS*† *n* (%) [95% CI]
Age (years)						
18–34	8 (3.0) [0.96–5.06]	32 (10.6) [6.9–14.3]	5 (2.7) [0.36–5.0]	21 (8.4) [4.7–12.1]	21 (16.2) [9.8–22.5]	44 (18.4) [13.1–23.7]
35–49	49 (18.4) [13.76–23.1]	51 (19.1) [14.2–24.0]	31 (16.7) [11.3–22.0]	22 (9.8) [5.7–13.9]	22 (16.9) [10.5–23.4]	27 (13.0) [8.3–17.7]
50–64	103 (38.7) [32.9–44.6]	27 (22.3) [14.3–30.3]	79 (42.5) [35.4–49.6]	27 (35.7) [24.1–47.3]	27 (20.8) [13.8–27.7]	20 (21.0) [12.4–29.6]
65+	106 (39.9) [33.9–45.7]	110 (49.0) [41.8–56.3]	71 (38.2) [31.2–45.2]	33 (33.9) [23.1–44.7]	33 (25.4) [17.9–32.9]	34 (42.6) [30.6–54.6]
Race						
White	263 (98.9) [976–100.1]		173 (28.0) [24.4–31.5]		125 (96.2) [92.8–99.5]	
Other	3 (1.1) [0.14–2.4]		13 (32.5) [17.9–47.0]		5 (3.8) [0.54–7.2]	
Education						
<HS	120 (45.1) [39.1–51.1]		31 (49.2) [36.9–61.6]		21 (16.2) [9.8–22.5]	
HS	100 (37.6) [31.8–43.4]		93 (32.4) [26.9–37.8]		52 (40.0) [31.6–48.4]	
>HS	46 (17.3) [12.8–21.8]		62 (20.2) [15.7–24.7]		57 (43.9) [35.3–52.4]	
Total (crude) failure in 3 years	266 (26.8) [23.9–29.4]		186 (27.9) [24.5–31.3]		130 (19.6) [15.6–22.6]	
Total *N* by state	992		667		665	
Total (adjusted) failure in 3 years		222 (20.5) [17.8–23.2]		105 (15.2) [12.3–18.1]		127 (19.6) [16.3–22.9]

Notes. HS = high school; [a] = Farm Family Health and Hazard Surveillance Project; [b] = Louisiana Farm Family Injury Prevention and Health Initiative; [c] = Texas Farm Women Study.

*Age and overall not up to date past 3 years the only available trended data for comparison.

†Behavioral Risk Factor Surveillance System (BRFSS) data in each state analyzed in the same year data collected.

were none, Medicaid, Medicare, and private or group. Preventive health behavior was evaluated by asking prior mammography, prior breast exam, and current smoking status (never smoked, smoked and quit, or currently smoke). For this study, failure to obtain Pap testing is defined as those women whose last Pap test for cervical cancer screening was done more than 3 years from the time of the data collection date. A 3-year time frame was chosen to evaluate compliance rates based on the most recent guidelines from the American Cancer Society. No attempt was made to ask history of subtotal or total hysterectomy.

Statistical Analyses

Prevalence estimates of sociodemographic variables, farm domain characteristics, other preventive health practices, and healthcare access were generated for the sample of farmwomen. Summarized data from the state BRFSS survey questions were used to compare failure to obtain Pap test rates within the last 3 years prevalence estimates representative of each state's adult population. Logistic regression was used to generate prevalence odds ratios of failure to obtain Pap testing in the last 3 years. History of hysterectomy, a potential confounder, was not asked of the sample, and therefore, was not evaluated. However, other research has demonstrated no altered associations when included in the logistic regression models (Hagdrup, Simoes, & Brownson, 1997).

Results

The demographic and farm domain characteristics are summarized in Table 1. The majority of the women were married, White, had either a high school or higher education, and did not work off the farm. The magnitude of failure to obtain Pap testing in the past 3 years by state location and select characteristics is described in Table 2. Among respondents, 26.8% (95% confidence interval [CI], 23.9–29.4) from Kentucky, 27.9% (95% CI, 17.8–23.2) from Louisiana, and 19.6% (95% CI, 15.6–22.6) from Texas were not up-to-date on Pap tests. Although the failure rate in Texas was comparable to state BRFSS rates, failure rates in Kentucky and Louisiana were at least 6% greater than in women living in those states.

A univariate description of Pap test utilization by demographic, farm characteristics, and healthcare access is presented in Table 1. Adjusted odds ratios derived from the final Pap test logistic regression model are presented in Table 3. Demographic characteristics associated with failure to obtain Pap testing were age and education. Age was associated negatively with Pap test adherence, with progressively decreasing odds of compliance in older age groups. Education demonstrated strong association with Pap nonadherence in respondents with years of education of high school or less. Farmwomen living on the farm were 1.8 times more likely to be nonadherent with Pap testing. When examining role load, women who did not work off the farm and who engaged in less than seven types of tasks were significantly more likely to fail to obtain Pap testing. Not surprisingly, those without health insurance were less likely to be up-to-date with Pap testing. Positive predictors of increased screening compliance were being married, having a previous history of mammography, and having a previous history of breast exam.

Discussion

Screening Pap tests are effective in reducing cervical cancer mortality, but they are underutilized. In an attempt to

TABLE 3. Adjusted Odds Ratios for Potential Explanatory Variables for Failure to Obtain Pap Test Obtained From a Fitted Logistic Regression Model

Characteristic	Odds Ratio	95% CI
Education		
<High School	1.99	1.46–2.69
High School	1.51	1.78–1.93
>High School	1.0	–
Marital status		
Married	0.49	0.34–0.71
Not married	–	
Age (years)		
18–39	1.0	–
40–49	3.01	1.90–4.77
50–59	4.01	2.55–6.30
60–64	6.04	3.71–9.93
>65	7.46	4.66–11.93
Location of home		
On-farm	1.78	1.32–2.39
Off-farm	–	
Role load		
Off-farm work and 11–14 tasks	1.0	–
Off-farm work and 7–10 tasks	1.46	0.74–2.91
Off-farm work and <7 tasks	1.15	0.66–2.00
No off-farm work and 11–14 tasks	1.37	0.77–2.43
No off-farm work and 7–10 tasks	1.62	0.88–2.93
No off-farm work and <7 tasks	1.74	1.00–3.2
Healthcare access		
Insurance		
None	1.47	1.05–2.05
Medicaid	2.24	0.69–7.31
Medicare	1.52	0.96–2.40
Group/private	1.0	–
Preventive health behavior		
Ever had mammogram	0.28	0.20–0.39
Ever had breast exam	0.44	0.29–0.64
Time to healthcare facility		
1–29 min	1.0	–
30–59 min	1.05	0.69–1.59
1 hour or more	1.14	0.73–1.78

understand a subgroup of a rural population, this cross-sectional study examined factors associated with Pap testing among farmwomen in three states. A high percentage of farmwomen are being screened for cervical cancer. However, cervical cancer screening frequencies for farmwomen from all three states were lower than the *Healthy People 2010* target of 90% (USDHHS, 2000). Farmwomen in this study sample had failure rates similar to Appalachian women (Hall, Uhler, Coughlin, & Miller, 2002) and rural Wisconsin women (McCarty et al., 2003). When comparing women in this sample to state-level BRFSS summary data, the proportion of farmwomen in two of three states in this sample had lower adherence rates than a sample of women residing in the same state (Kentucky and Louisiana). Explanation for utilization patterns of Pap testing among farmwomen in Texas is not clear from the results of this study. Future researchers of farmwomen should explore characteristics of access to healthcare by region, other variables that contribute to geographical and social isolation, health literacy levels, farm work patterns, and demographic variables when developing predictive models.

A positive association was found between demographic and farm characteristics and cervical cancer screening utilization. Similar to other studies, multivariate analysis revealed women with low education levels and lack of insurance were less likely to obtain Pap testing (Hall et al., 2002; Haywood, Shapiro, Freeman, & Corey, 1988; Potosky, Breen, Graubard, & Parsons 1998; The National Cancer Institute Cancer Screening Consortium for Underserved Women [NCI Consortium], 1995; Thompson et al., 2002). In a national survey, it was also found that women of lower socioeconomic status who were uninsured and over the age of 50 years were less likely to have had preventive measures such as Pap smear tests and breast examinations. In this study, those who were married were less likely to fail to participate in up-to-date cervical cancer screening. Not being married as a risk factor for nonadherence with other cancer screening has been reported elsewhere (NCI Consortium).

The median age at diagnosis for cancer of the cervix uteri in the United States is 47 years of age (SEER, 2003). The majority of women with invasive cervical cancer are diagnosed over 45 years of age (SEER). In Wisconsin, 56% of all cervical cancer-related deaths occurred among women aged 65 years or older (Remington et al., 1990). Older age groups are significantly less likely to be adherent with Pap testing. There are a number of reasons older women may not obtain Pap testing, including physical and functional limitations. Although many women in this study were active in farming operations, suggesting some level of physical endurance, living in a rural community contributes to difficulty in accessing healthcare services. A pattern of decreasing utilization with age found by other researchers of rural populations (Muldoon, Schootman, & Morton, 1996) is supported by the current research. This decrease is of concern given the fact that age is a strong predictor of cervical cancer. Farmwomen, who do not seek Pap testing as they age, are at risk of failure to detect cervical cancer.

Unexpected findings were noted in regard to the number of farm tasks among farmwomen and farm residence. Location of the home or the level of involvement in farm work has not been examined in previous studies as a variable contributing to underutilization of preventive services. Women who lived in houses located on the farm were almost twice as likely to fail to obtain Pap testing within the last 3 years compared to those whose house was not on the farm. An explanation may be that when farm families do not have a house on the farm, they live in town and own and work farm acreage outside of town limits. The location of the house may suggest that those who live further from health services are less likely to engage in early detection of cervical cancer screenings. In addition, women who do not work off the farm and are minimally involved in farm-related tasks were 1.5 times more likely to fail to obtain Pap testing. Taken together, these findings contribute to the concern that not accessing preventive services may be a function of geographic isolation.

Although women who do not live in a house on the farm and who are not engaged in work were less likely to be up-to-date on Pap testing, time to the closest healthcare facility was not a significant factor associated with Pap testing in the final multivariate logistic regression analysis. This finding suggests that the travel time to a facility in and of itself may be less important than the lifestyle pattern that leads farmwomen to be in the vicinity of healthcare services with opportunity to schedule physician's visits. Although off-the-farm work with varying number of tasks was not significant in the final regression model, future studies should explore in greater depth the possibility that when women are employed off the farm and have fewer farm-related responsibilities, they may have greater flexibility to schedule Pap tests if they are closer to the physical location of the healthcare facility before or after working hours.

A positive association with Pap testing was found in other preventive health behaviors, specifically mammography screening and breast self-exam. One explanation for this finding may be that physicians are more likely to recommend screening for both breast and cervical cancer to their patients at the same time. Also, women who engage in one preventive behavior may be more likely to engage in several preventive behaviors.

It is possible that the women who participated in this study were more aware and perceptive of cervical cancer screening. Additionally, the screening rate presented here is based on self-report data rather than on information obtained from medical records or insurance claims. The guidelines for women with a history of subtotal or total hysterectomy are not delineated clearly. The recommended guidelines for Pap testing vary for those with a history of hysterectomy. For this study, women were not asked if they had a history of hysterectomy. Therefore, some women may have been inappropriately categorized as not up to date, when in reality their physicians had not recommended a Pap test because of their prior histories of hysterectomy.

Many obstacles to improved cancer prevention and detection among farmwomen remain, especially for older women who lack adequate income and insurance for preventive healthcare. Community-wide efforts to expand cancer screenings to rural areas and to encourage use of these services are needed to address the shortfall of meeting *Healthy People 2010*, a national initiative that has set

specific healthcare objectives (USDHHS, 2000). Women in these three states had a failure to obtain Pap testing that exceeded this goal.

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