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Review

Breast and cervical cancer screening among migrant and seasonal farmworkers: a review☆

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Abstract

Women constitute about one in five hired farmworkers in the US. Their health may be affected by exposure to unhealthy living and working conditions, by increased exposure to health hazards, by poverty, and by poor utilization of health care and preventive services. About 69% of migrant and seasonal farmworkers were born outside the US, mostly in Mexico and central America, and many speak little English. The health concerns of women who are migrant and seasonal farmworkers include breast and cervical cancer, which can be prevented or controlled through routine screening, but cancer incidence and mortality data for migrant workers are sparse. We reviewed published studies that examined breast and cervical cancer screening in this population. These studies include cross-sectional surveys, health needs assessments, and randomized and non-randomized intervention trials. A review of published studies of cancer screening among women who are migrant and seasonal farmworkers indicates that underutilization of mammograms and Papanicolau (Pap) tests among this population may stem from their limited awareness of the importance of cancer screening and cultural beliefs. Other barriers include cost, lack of health insurance, lack of transportation and child care difficulties. The extent to which results obtained in selected localities are generalizable to other settings is uncertain, but results to date provide important information about possible approaches for increasing cancer screening among women migrant farmworkers. © 2002 Published by Elsevier Science Ltd. on behalf of International Society for Preventive Oncology.

Keywords: Breast cancer; Cervical cancer; Farming; Hispanics; Mammography; Migrant health; Papanicolau test; Prevention; Screening

1. Introduction

Hired farmworkers, as defined by the US Census Bureau, are people employed to perform tasks on farms for the purpose of producing an agricultural commodity for sale. Most hired farmworkers are employed on a seasonal basis; between seasons, some work in non-agricultural jobs for part of the year and others are unemployed or return to their home country [1].

Three major North–South migrant "streams" have been identified in the US to provide a common language for discussion of service delivery, data collection, and policy decisions [2,3]. Migrant farmworkers in southern California make up the stream that heads north to northern California, Oregon, and Washington. Another stream consists of workers who are based in Texas and Arizona and travel up the Mississippi Valley to Ohio, Michigan, Indiana, Illinois, and other mid-western states. The eastern stream is made up of workers who travel from southern Florida to Georgia, South and North Carolina, Maryland, Delaware, New Jersey, New York, and New England. The eastern stream is the most ethnically heterogeneous; it includes African Americans, Mexican Americans, Mexicans, Puerto Ricans, Haitians, and Jamaicans. The other two streams are predominantly Hispanic but include American Indians and Southeast Asians.

As highlighted by the National Advisory Council on Migrant Health in its Year 2000 recommendations (Samuels et al., National Center for Farmworker Health (NCFH), 1998), the circumstances of agricultural labor include hard physical work, fatigue, poverty, and exposure to prejudice and hostility. The conditions of migrancy partly affect health through increased exposure to unhealthy living and working conditions and health hazards, through an overemphasis on acute care (rather than preventive care), and underutilization of health care [3,4]. The latter may be due to a lack of awareness of care, availability of care, or accessibility of care [3].

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Migrant and seasonal farmworkers are often isolated due to their residence in rural agricultural communities, lack of transportation, and limited English speaking ability. About 69% are foreign-born, mostly from Mexico and central America. Indigenous peoples from southern Mexico and Guatemala working in US agriculture, whose numbers have increased in recent years, may speak indigenous dialects as their first language and perhaps, Spanish as their second [1]. Many workers speak Spanish, but others speak French, Creole, Hmong, or Vietnamese [3]. Besides transportation difficulties, Longo and Donahue [5] found that language problems and cultural insensitivity of the clinics were two common reasons for migrant farmworkers in Virginia to not seek health care.

Roughly one-third of migrant and seasonal farmworkers are undocumented or unauthorized to work in the US [1]. At least one of five hired farmworkers is female. Educational attainment is low on average and many hired farmworkers live in poverty [1,6]. By the nature of their work, farmworkers are geographically and socially isolated which, with their low income, contributes to deficiencies in housing, sanitation, nutrition, and access to preventive health care and other medical services [7]. The intermittency of work and the low rate of payment for migrant work all lead to long hours in the fields and provide disincentives for seeking health care [3]. Time away from work often results in lost wages.

Under the Migrant Health Act of 1962, the US government provides support to more than 120 community-based and state agencies that offer comprehensive primary care services to address the needs of hired farmworkers. This network of clinics, however, provides services to only about 15–20% of the eligible population [1].

In 1990, Congress established an initiative through the appropriations bill for the Department of Health and Human Services (P.L. 101–517) to significantly improve the health of rural Americans, particularly agricultural workers and their families [8]. As part of that effort, the National Institute for Occupational Safety and Health (NIOSH) of the Centers for Disease Control and Prevention convened the national Surgeon General's Conference on Agricultural Health and Safety. NIOSH has fulfilled many of the directives resulting from this conference by collecting national data on occupational injury and health status among farmworkers, including cancer prevalence. The cancers of interest in the NIOSH database are associated with occupation, however, and do not include data on non-occupational cancers, such as breast and cervical cancer.

In the absence, then, of national data on non-occupational cancers, various researchers have undertaken efforts to collect local data on farmworkers. In addition, efforts to identify ways to increase cancer screening among women who are migrant and seasonal farmworkers have recently begun.

This paper reviews published studies of breast and cervical cancer screening among women who are migrant and seasonal farmworkers. The studies include cross-sectional surveys, health needs assessments, and randomized and non-randomized intervention trials. This review begins with a summary of cancer-related issues among women who are migrant and seasonal farmworkers. After summarizing studies of breast and cervical cancer screening among these women, the review discusses the studies' findings in relation to the more fully developed literature on cancer screening among Hispanic women, and ends with suggestions for future research.

2. Cancer-related issues among women who are migrant and seasonal farmworkers

Farmworkers are exposed to ultraviolet radiation from sunlight, which can cause skin cancer, as well as to a variety of potential carcinogens, including herbicides and pesticides, solvents, oils, wood preservatives, and other chemicals used on farms. Although none of those exposures has been implicated in cancer of the breast or cervix, Zahm and Blair [9] reviewed studies on hired farmworkers' cancer risk and found that they, like farmers, had elevated risk of several cancers, including lung, stomach, and multiple myeloma (and, among men, prostate and testicular cancer). Risk for skin cancer is known to be elevated among farmers and, presumably, farmworkers (especially those with lighter skin), since their occupational need to be outdoors is great [9]. Elevated rates of brain tumors and leukemia have been observed among some migrant children [3].

Cancer incidence and mortality data for migrant and seasonal farmworkers are sparse, although socioeconomically disadvantaged groups have often been found to have relatively low survival rates for nearly all types of cancer [10]. Migrant and seasonal farmworkers are one of the poorest and most medically underserved populations in the US [2,11] and warrant further study. Research has been limited by methodological difficulties associated with studying transient populations [11].

Although data for women who are migrant and seasonal farmworkers are lacking, research shows that Hispanic women in the US as a group are at increased risk of invasive cervical cancer compared with non-Hispanic women, as are African American women and some Asian and Pacific Islander women (for example, Vietnamese women). Most cervical cancers (among both Hispanic and non-Hispanic women) are diagnosed at the localized stage, but older and minority women are more likely to be diagnosed with advanced disease [12–16]. Most deaths from cervical cancer occur among women who are at least 50 years old. Hispanic women are also more likely than non-Hispanic women to be diagnosed with breast cancer at a later stage and may have poorer survival following a breast cancer diagnosis, even though breast cancer incidence and mortality rates are lower in Hispanic women than non-Hispanic women [14,16]. The ethnic differences in cancer stage at diagnosis may be explained by the fact that Hispanic women are not as likely

to undergo routine breast and cervical screening as non-Hispanic women [17–21].

3. Methods

We identified relevant articles through a MEDLINE search of literature published between January 1982 and March 2002. The searches were limited to articles published in English. We used the keywords "cervical neoplasms," "breast neoplasms," "mass screening," and "transients and migrants" to scan titles, abstracts, and subject headings in the databases. Additional studies were identified by reviewing recent conference proceedings (for example, Migrant Farmworker Stream Forums), technical reports (for example, reports from the NCFH), and the references of published articles. Primary studies were included if they focused on breast or cervical cancer screening among adult migrant or seasonal farmworking women. Both qualitative and quantitative studies were considered. Studies conducted outside of the US were excluded.

4. Studies of breast and cervical cancer screening among migrant and seasonal farmworkers

4.1. Health needs assessments among migrant and seasonal farmworkers

In an assessment of farmworkers in the Delmarva (Delaware, Maryland, and Virginia) peninsula in October 1994, Hooks et al. [22] collected detailed information through in-person interviews with labor contractors and farmworkers, telephone interviews of growers, and interviews of service providers. The researchers completed two case studies to learn more about the experience of low income Hispanic women seeking Papanicolau (Pap) tests, and they surveyed the knowledge, attitudes, and practices of 475 Spanish-speaking farmworkers regarding skin and cervical cancer and overall health information. Initial results suggest that knowledge and understanding of cervical cancer and Pap tests are fairly low among the farmworkers surveyed [22]. For example, 44% of the women did not know what a Pap test is. Detailed results from the study have not yet been published.

4.2. Studies of correlates of breast and cervical cancer screening among migrant and seasonal farmworkers

Lantz et al. [11] assessed the cancer-related knowledge, attitudes, and practices of migrant farmworkers in Wisconsin through both qualitative and quantitative research. In 1992, researchers conducted a series of focus groups with 55 Hispanic migrant farmworkers (22 women and 33 men) in central Wisconsin [11]. The results suggested a lack of knowledge and information about the causes, and early detection and treatment of cancer as well as fatalistic attitudes toward the disease. Lantz et al. identified cultural barriers including attitudes of embarrassment and shame associated with physical examinations and women's strong discomfort with male clinicians. Structural barriers to secondary prevention included the cost of obtaining health services, time constraints associated with the need to work and long work days, and a lack of transportation [11].

Following the focus groups, Lantz and Redding [23] randomly selected a sample of Latino migrant farmworkers from the employee rosters of 27 Wisconsin agricultural businesses in a 10-county area. Bilingual interviewers collected data through face-to-face interviews at migrant housing camps. The respondents ($n = 162$) ranged in age from 35 to 74. Myths and misconceptions about cancer were common among the respondents; for example, 75% believed that bruises cause cancer. Eighty percent of the respondents, however, believed that a person can do much to prevent cancer and 93% believed that the chances for cure are good when a cancer is found early.

Skaer et al. [24] examined determinants of cancer screening through a survey of Hispanic women ($n = 512$) who were patients at migrant health clinics in Washington State. All foreign-born Hispanic women aged 20 or older who had no history of breast or cervical cancer and who attended any one of six migrant health clinics were eligible to participate. The survey questionnaire was translated into Spanish, pre-tested, and assessed for cultural appropriateness and sensitivity by clinic directors and medical staff. Bilingual, female interviewers administered the survey in the spring of 1994. About 29% of the respondents (151 of 512) were 20–29 years of age, 28% ($n = 142$) were 30–39 years of age, and the remaining respondents ($n = 219$ or 43%) were 40 years or older. The respondents had lived in the US for an average of 10 years. Their mean years of education was about 6 and 11% had no formal education. Eighty-five percent of the respondents had a family income of US$ 15,000 or less per year and 36% had a reported family income of less than US$ 5000 per year. Fifteen percent of the respondents had never heard of a Pap test, and 78% had ever had a Pap test. Thirty-eight percent of those who were at least age 40 had never heard of a mammogram. A similar proportion had ever received a mammogram and 30% had received one in the past 2 years.

Logistic regression was used in the analysis to identify factors independently associated with receipt of Pap tests and mammograms [24]. Being married, higher income, more years of education, and longer US residency were associated with receiving a Pap test. Women with family incomes of US$ 5000 or more were more likely (OR = 2.1, 95% confidence interval (CI) 1.3–3.6) to have received a Pap test than were women with family incomes of less than US$ 5000. Similarly, education and increasing years of US residency were associated with receipt of a mammogram after adjustment for age and other factors.

4.3. Evaluations of interventions to increase breast and cervical cancer screening among migrant and seasonal farmworkers

Skaer et al. [25] carried out a randomized intervention trial within two migrant health clinics in Washington State. The clinics were randomly selected from among the six clinics that participated in the baseline study described earlier. All foreign-born Hispanic women age 40 years or older who had no history of breast cancer and who had not obtained a mammogram within the past year were eligible to participate. A total of 80 women (40 per clinic) were assigned on an alternating basis to either a control group or an intervention group. The intervention consisted of clinic instruction plus a voucher for a free mammogram [25]. After completing a survey, the women assigned to the intervention group were informed of the recommended screening guidelines and importance of mammography, were given instructions for making an appointment, and were provided with directions to the screening facility along with a mammogram voucher. The women assigned to the control group were given the same educational information and instructions for obtaining a mammogram but were not provided a voucher. Only 18% of the women in the control group received a mammogram compared with 88% of those in the voucher group. Logistic regression analysis confirmed that women given a voucher were much more likely to obtain a mammogram than were those in the control group (adjusted OR = 47.0, 95% CI 9.3–238.4).

Boucher [26] assessed the impact of trained health advisors on cervical cancer screening rates among Mexican farmworkers in migrant labor camps in northern California. In the summer of 1997, researchers administered a Spanish language survey that was based on CDC's Behavioral Risk Factor Surveillance System (BRFSS) questionnaire [27] to 614 Hispanic farmworker women who resided in six migrant labor camps. In the summer of 1998, volunteer lay health advisors who resided in the camps were recruited for an 8-week training program on cervical cancer; they subsequently presented public education sessions for other residents. In the summer of 1999, the BRFSS questionnaire was re-administered to a sample of 200 women. The results showed that self-reported cervical cancer screening rates had significantly increased, with an average increase of 28% (no CI provided). Knowledge of Pap tests also increased.

Goldsmith and Sisneros [28] conducted a study to identify barriers to cancer prevention and to evaluate the effectiveness of a program to increase breast and cervical cancer screening among Spanish speaking farmworkers in California's Central Valley. Bilingual health educators initially met with focus groups of farmworker women to determine barriers that prevented women from seeking cancer screening. Most of the focus group participants had a fatalistic attitude toward cancer and considerable fear of the disease. They expressed anxiety about the suffering and pain associated with cancer, and many felt that a person could do virtually nothing to prevent or survive this disease. Also common was the belief that only God determines whether a person gets cancer. Many participants had a limited or fragmented knowledge about the causes of cancer and the possibility of effective treatment and held conflicting beliefs about the importance of early detection and treatment. Many of the women expressed embarrassment and shame about physical examinations of their breasts and cervixes, especially when examinations were performed by male clinicians. Results obtained from the focus groups confirmed that cost, transportation, fear of the medical system, and time constraints were barriers to accessing health and cancer screening services.

Using information gained from the focus groups and at health fairs, Goldsmith and Sisneros developed a cancer education and screening outreach program; their goal was to enroll 2500 farmworkers [28]. Participants received a presentation in Spanish on breast and cervical cancer that included a pre-test and post-test to assess increases in knowledge. Anatomical models of organs were used for health education in small group settings. They also were encouraged to attend a facility to receive free breast and cervical cancer screenings. Preliminary findings indicated that 1732 female farmworkers had been enrolled in the outreach program by 1 December 1995. Nearly one-third of the women reported that they had never had a Pap test, and 61% of those aged 50 or older had never had a mammogram. A statistically significant increase in knowledge about cancer and cancer prevention was observed among participants. A total of 317 of the women redeemed vouchers for cancer screenings; 183 Pap tests, 105 clinical breast examinations, and 29 mammograms were completed by 1 December 1995.

The NCFH showed that farm working women trained as lay health advisors can help to facilitate breast and cervical cancer screening in this population [29]. The use of community health workers around maternal and child health issues had been shown to be effective with migrant farm working women, [30,31] but studies of their role in increasing breast and cervical cancer screening in this population were lacking. Over the 3-year project, the Traveling Lay Health Advisor Project (Consejeras de Salud) made 3669 referrals specifically for breast cancer screening and 3282 for cervical cancer screening, with 862 women followed up for abnormal breast and cervical screening results [29]. A "1-800" telephone number was employed to assist case managers, physicians, nurses, and lay health advisors with service coordination for farmworkers. The program also established the first database on breast and cervical cancer screening patterns in farm working women (E. Roberta Ryder, CEO, NCFH, May 2001, personal communication).

5. Discussion

The studies summarized in this review suggest several areas for further research involving migrant and seasonal farmworkers, including the need to conduct more cancer preven-

tion and control studies involving this population, and the lack of national data on cancer screening among migrant and seasonal farmworkers. Currently, no national database on migrant and seasonal farmworkers continually collects information on preventive aspects of non-occupational cancers. It is therefore difficult to identify or monitor national patterns of breast and cervical cancer screening. Because these screening tests increase in importance as women age and because screening must be ongoing and routine, developing an understanding of the screening behaviors of women who are migrant and seasonal farmworkers is important. Although local efforts at data collection contribute to that understanding, they do not provide nationally representative data useful for public policymaking.

One possible approach would be to include questions on breast and cervical cancer screening in the National Agricultural Worker Survey (NAWS), which is conducted annually by the US Department of Labor [1]. Hired farmworkers are randomly sampled using an enumeration of all places where hired farmworkers are employed. Since its inception in 1987, the NAWS has gathered considerable data on the employment conditions, job history, demographics, and selected health outcomes of hired farmworkers. Questions about breast and cervical cancer screening are not currently included in the NAWS but could be included in future questionnaires.

The desirability of ongoing data collection about cancer screening is partially driven by the changing diversity and continuity of the migrant farmworker population. Every year, workers drop out because they can no longer perform the work or because they have found a place to live permanently. They are replaced by people who are newer to the US and who are poorer and less educated than those before them. Data from the NAWS indicate that the numbers of workers from Asia and the West Indies increased in the 1990s [1].

Additional cancer prevention and control studies involving migrant workers are needed to identify correlates of screening and effective ways to provide screening. The results of studies identified in this review and of other research involving Hispanic women in the US [11,18,32] indicate that underutilization of breast and cervical cancer screening tests may be a result of limited awareness of or knowledge about the importance of cancer screening. Among Hispanic women, lack of knowledge is a frequently cited correlate to not being screened, especially among less educated groups [33,34]. In one study, even though most Hispanic women were familiar with the term Pap test, they lacked understanding of its purpose; many women did not know what a cervix is or were confused about who should have the test [34]. Many women who were no longer sexually active or who were beyond child-bearing age did not know that they should be getting Pap tests. Some research, however, suggests that an increase in Pap tests among Hispanic women can occur without knowledge about the test through social norms or cultural influences [33]. Additional studies are needed to clarify these issues and to determine how screening behaviors can be maintained over time.

Important findings are likely to come from the California Agricultural Worker Health Survey (CAWHS), a health needs assessment conducted in 1999 by the California Institute for Rural Studies with support from the California Endowment [35]. Although the survey portion of the CAWHS has provided many important findings, results from the CBEs and Pap tests have not yet been published. The health needs assessment included a community-based, household survey of health behaviors and physical examinations. The latter included skin and CBEs, Pap tests, and a variety of other procedures.

Research is also needed to identify effective interventions to overcome barriers to breast and cervical cancer screening among migrant workers, such as the costs of screening tests, lack of transportation or child care, lack of health insurance, and poor access to affordable health care [31,36–38]. Previous studies have shown that Hispanic women who do not have health insurance, have not received routine health care or have not received a provider's recommendation to get a mammogram or Pap test are less likely to have been screened [18,19]. Moreover, even when economic barriers to care are reduced or removed, migrants use fewer medical services, [4] suggesting that economic factors may not be the only barriers to screening.

Lastly, research is needed to examine sociocultural beliefs that may affect use of screening tests by migrant and seasonal farmworkers. Studies involving Hispanic women in the US have shown that embarrassment and shame associated with having a stranger view private body parts, a past bad experience with screening, or a lack of self-efficacy in dealing with the health care system or with a provider could impede future screening efforts [34]. The belief that breast trauma may induce breast cancer or that cancer is God's punishment for improper or immoral behavior may be interpreted as fatalism or a belief in something one cannot control. In a follow-up study, [23] however, a conclusion of fatalism was contradicted by the hopefulness expressed by the majority belief that "much can be done to prevent cancer." Goldsmith and Sisneros [28] found similar results.

Fear associated with cancer has been linked to fear of the screening test, fear of the disease, fear of the cost of treatment, fear of the treatment, or fear of the financial and physical burden that cancer may place on family members [36,39]. Further research is needed to understand the meaning of each specific fear, to distinguish the conditions under which each fear occurs and to identify how to most effectively neutralize the fear and encourage routine cancer screening.

One of the challenges of providing preventive health care services to migrant and seasonal farmworkers is the difficulty of providing case management services and continuity of care to people who must travel frequently and often over great distances as a requirement of their employment (Samuels et al., National Advisory Council on Migrant

Health, Year 2000 recommendations, NCFH, 1998). The Migrant Clinicians' Network (1988, unpublished data) lists the following challenges to migrant and seasonal farmworkers obtaining health care: incomplete health histories, poor referral service resources, low priority for health care because of the pressures of work, timing of health visits, and health problems that providers may not recognize if they are uncommon in the surrounding population. Research is needed to gather evidence about how community health workers can use case management to increase screening and follow-up rates.

5.1. Conclusions and recommendations for future research

Research is warranted to determine how to most effectively use community health advisors to deliver breast and cervical cancer screening messages using standardized protocols and culturally and linguistically appropriate materials and messages. Breast and cervical cancer educational efforts and provision of services must be renewed every year to reach new women and to reinforce the learning and practice needed with those returning to the fields. Future studies should include subpopulations of migrant and seasonal farmworkers, such as West Indians and Asians because their screening behaviors are unknown.

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