Research Article
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A qualitative study of health fairs to increase cancer screening in the US from key informant interviews

Abstract

Screening for the early detection of cancer is effective in decreasing morbidity and mortality, healthcare costs, and disability in the United States. Results from the 2010 National Health Interview Survey indicate that cancer screening rates among the general population are still well below Healthy People 2020 targets. Health fairs are one of the most recognizable methods for community-based health promotion. Due to their frequency, impact and reach, health fairs are of interest in the promotion of screening. We examined the use of health fairs to increase breast, cervical, and colorectal cancer screening in community-based settings in the U.S. Health fair coordinators were recruited and interviewed by phone from July to September 2012. We used a 72 question interview guide to collect data on health fair goals, activities, costs, and outcomes. Fourteen health fair coordinators completed the interview. Seven of the health fairs focused only on breast cancer (50%), 3 (21.4%) on colorectal cancer, 3 (21.4%) on breast, cervical, and colorectal cancer, and 1 (7.1%) on breast and cervical cancer. About 80% of the health fairs partnered with hospital or clinics. Overall, the coordinators used of a combination of two or more of the following activities: booths/fair (78.6%), presentations/ lectures (50%), meal/snack (50%), screening/ referral (50%), give away/ raffle (42.9%), media/entertainment (21.4%). Health fair activities were categorized into Community Guide for Preventive Services recommended interventions to promote screening: small media (100%), one-on-one education (92.9%), reducing structural barriers (92.9%), group education (57.1%), and reducing out of pocket costs (64.3%). Screening outcomes varied widely with most health fairs resulting in 30-45 screenings. Three separate case studies of health fairs held in the U.S. between 2010 and 2012 are presented. With the dearth of literature on using health fairs to increase cancer screenings, this study provides important information on the implementation, reach, and impact of health fairs in increasing breast, cervical, and colorectal cancer screening.

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Introduction

Screening for the early detection of breast, cervical, and colorectal cancers has made significant strides in reducing cancer related morbidity and mortality.[1–4] Despite this, breast cancer remains the second leading cause of cancer related death among women and cervical cancer is a top ten cause.[5] Colorectal cancer is the third leading cause of cancer related death for both men and women.[5] Improving access to and uptake of cancer screening services may help further decrease mortality by detecting cancers at earlier stages, when treatment is more effective. Results from the 2010 National Health Interview Survey indicate that cancer screening rates among the general population are still well below Healthy People 2020 targets.[6,7] In addition, studies of cancer screening uptake have indicated that lack of health insurance and a usual source of care,[6,8–10] race/ethnicity,[8–10] lower income and education,[6,8–10] and other socio-demographic factors,[6,8–10] are associated with a lower likelihood of being screened.

The Community Preventive Task Force has evaluated several intervention strategies to increase uptake of cancer screening. However, the vast majority of the interventions evaluated in the Guide to Community Preventive Services (The Community Guide) have been individual[11] or physician level[12] intervention strategies. Community level intervention strategies are needed in order to increase the public health impact of our intervention strategies[13] and expand the reach of our efforts to increase cancer screening rates.

Health fairs are one of the most recognizable methods for community-based health promotion conducted in the United States. They are community events that offer education on a variety of health topics and sometimes screening opportunities.[13,14] These fairs are often hosted by health professionals, volunteers or lay people and are held in many different sectors of the community such as worksites, churches, schools, shopping malls and parking lots.[13] Goals of the health fairs are to raise awareness and offer health education, make referrals to clinical services, and partner with other agencies to coordinate health promotion.[13,15] Additional aims are to train students from allied health and medical fields in how to conduct risk assessment, offer preventive health screening on site and counsel patients.[16–19] Health fairs also are used to engage communities in community health intervention planning and recruit research participants.[18,20,21] They have been more widely used for cancer education and screening promotion and often target vulnerable populations, such as the un- or underinsured.[22–25]

Although health fairs are widely utilized in communities, rigorous outcome evaluations are rare.[14] A recent review of specials events for increase cancer screening, found only 5 health fairs with evaluation data.[26] The health fairs in the published literature often utilized group or one on one education, educational materials, and/or offered free screening, leading to screening appointments for breast and cervical cancer,[22] screenings for breast, cervical and colorectal cancer,[23–25] or clinical exams.[23,24] Several of the published articles on health fairs describe how they were delivered or participant satisfaction (process evaluation). Further understanding of health fairs is necessary to evaluate their reach, effectiveness, cost effectiveness and long-term impact.[13,14]

The purpose of this paper is to describe the goals, reach, activities, costs and outcomes of health fairs conducted in the community to promote cancer education and screening across the U.S. through a qualitative study. These data will contribute to the understanding of the value and effectiveness of health fairs in increasing cancer screening rates.

Methods

We interviewed fourteen health fair coordinators in the U.S. as part of a larger cross-sectional qualitative study of special events to promote cancer screening. Recruitment for the primary data collection process using purposive sampling began in June 2012. Advisory Committee members consisting of experts in the field of cancer prevention invited their affiliates and grantees to participate in this study through meeting announcements and word of mouth. We recruited health fair coordinators through the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), Comprehensive Cancer Control Program (CCCP), Colorectal Cancer Control Program (CRCCP), Cancer Prevention and Control Research Network (CPCRN), National AVON Foundation, and the advisory committee members' local Susan G. Komen affiliates. All procedures and protocols received approval from the CDC and Emory University Institutional Review Boards.

Prior to this study we conducted a systematic review of the peer-reviewed and grey literature of special events to increase breast, cervical, and colorectal cancer screening.[26,27] The 72-question interview guide was developed using the findings of the systematic review and feedback from an expert review panel consisting of 6 cancer researchers and prevention specialists in the U.S. The guide was divided into six sections and included:

a. Health fair demographics (timeframe, location, frequency of event, host agency agencies providing support, additional outreach)

b. Goals and target population (goals and objectives, recruitment, health fair's participant demographics)

c. Activities and delivery (implementation steps, community guide strategies used, follow-up, services provided, educational materials, costs, partners)

d. Results (screening outcomes, process data, additional data)

e. Discussion (benefits, barriers, recommendations) and

f. Health fair coordinator demographics.

It was piloted among 8 special event coordinators.

Eligible participants were health fair coordinators who had a role in planning, implementing, and/or evaluating a health fair addressing breast, cervical, and/or colorectal cancer in the past 2years. On average, interviews lasted about an hour (Mean=52minutes, SD 14). Participants received a $25 Amazon gift card for their participation. Some participants were followed-up with via e-mail to collect additional information such as specifics about educational brochures used at the health fair, evaluation results, and dissemination of findings in peer-reviewed journals and at conferences.

An SPSS version 21.0 database was created for analysis of quantitative and short text questions.[28] Analysis consisted of descriptive statistics. Qualitative data from open-ended questions were entered into Microsoft Excel for analysis. A codebook was developed by the co-authors. Two co-authors independently coded the responses according to major themes, and the implementation steps were categorized according to the Community Guide strategies to increase cancer screening.[29] Any discrepancies in coding were reviewed by a third reviewer.

Results

Participants

Out of the 37 health fair coordinators identified in recruitment, 14 reported having conducted a health fair that addressed breast, cervical, and/or colorectal cancer in the last 2years. The remainder of the health fair coordinators reported holding a health fair over 2years ago, were not focused on at least one of the specified cancers, were not located in the U.S., or held an event that was considered a different type of special event (e.g. festival, reception, run/walk, screening day). Of the reported health fairs, half focused only on breast cancer (50%), 3 (21.4%) on colorectal cancer, 3 (21.4%) on breast, cervical, and colorectal cancer, and 1 (7.1%) on breast and cervical cancer. Coordinators indicated that goals of the fairs were to increase awareness of cancer/cancer screening (28.6%), increase knowledge of cancer/cancer screening among participants (28.6%), reach special or vulnerable populations (28.6%), address access barriers (e.g. transportation) (14.3%), and enroll participants in existing cancer screening programs (28.6%). Many of the health fairs targeted underserved or uninsured participants (35.7%), while one health fair focused solely on a screening eligible population, meaning that all participants were assessed prior to the health fair to determine eligibility for the cancer screening the day of the health fair. Attendance at the health fairs ranged from 15 to 1200 participants (Mean=298, Median=200, SD=498.9) and lasted about 5hours (Mean 4.8, SD=2). The health fair held at a hotel had the highest participation (1200). The types of organizations who hosted the health fairs varied, but the majority of fairs were held at either a hospital/clinic (42.9%) or community based organization (28.6%) (Table 1).

All coordinators reported partnering with one or more organizations for the planning and/or implementation of the health fair. Clinics/hospitals served as partners most often (85.7%) followed by academic institutions (57.1%), community-based organizations (50%), government institutions (35.7%), and religious institutions (28.6%) and for profit organizations (28.6%), with many partnering with several organizations. Roles of the partner organization included media coverage or sponsorship (57.1%), provision of staff or volunteers (57.1%), supplying incentives and/or giveaways (50%), clinical services (21.4%) provision of a facility or venue (14.3%), or funding (14.3%).

Health fair activities

Health fair coordinators reported that pre-event activities included event planning/logistics (100%), working with partners (50%), recruitment (57.1%), and obtaining funding/sponsors (14.3%). Activities occurring during the event varied but consisted of a combination of two or more of the following: presentations/ lectures (50%), meal/snack (50%), screening/ referral (50%), booths/fair (78.6%), giveaway/ raffle (42.9%), and media/entertainment (21.4%). The post event activities varied to a lesser degree. The majority of coordinators responded that they followed-up with participants (64.3%) and some reported a follow-up meeting (21.4%) and writing reports (7.1%).

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Health fair coordinators reported using a combination of seven out of the eight Community Guide strategies including small media (100%), one-on-one education (92.9%), reducing structural barriers (92.9%), group education (57.1%), reducing out of pocket costs (64.3%), and client reminders (28.6%). Only one health fair used client incentives (7%). The two most common combinations of strategies included one on one education, small media, and reducing out of pocket costs (14.3%), and one on one education, group education, and small media (14.3%).

Table 1 Description of Health Fairs and Participants

Item	N	%
Target population (n=6)		
Screening-Eligible	1	7.1%%
Underserved or Uninsured	5	35.70%
Attendance (n=14)		
Mean (SD)	298	-498.9
Range	15-2000	
Age (n=14)	N	%
All Ages	3	30.00%
40 and Older Only	4	40.00%
Adults Only	3	30.00%
Other Age Category	0	0%
Race/Ethnicity (n=8)		
Attendance by race/ethnicity	Mean %	
White	23.70%	
American Indian/Alaska Native	9.70%	
African American	34.50%	
Asian/Native Hawaiian/Pacific	0.90%	
Islander		
Other race(s)	31.10%	
Hispanic or Latino*	62.00%	

*Defined as individuals whose origins are of Mexican, Puerto Rican, Cuban, Central or South American, or of some other Hispanic Origin

Table 2 illustrates the type of health fair activities as reported and how they map onto the Community Guide strategies. Reducing structural barriers comprised offering onsite cancer screening tests or other cancer-related clinical services such as mammograms, clinical breast exams, pelvic exams and distribution of FOBT or FIT kits. Sigmoidoscopy and colonoscopy were not offered onsite for any of the health fairs but participants were given FOBT or FIT kits and/or referred to medical providers if eligible. In 7 (50%) of the health fairs, screening costs were covered completely while the remaining 7 (50%) offered reduced costs for screening. Client reminders were used in combination with group and one-on-one education, and reducing out-of-pocket costs (n=4). Client reminders occurred by phone 1-2 weeks after the event in three out of four while one health fair used email reminders. Client incentives (i.e., a gift card, cash voucher) were used only once in combination with group education, reducing structural barriers and reducing out-of-pocket costs.

Patient navigators were present at 11 (78.6%) of the health fairs. The role of the patient navigator was to educate, register participants for on-site screening, and make referrals/schedule screening appointments for participants. Not surprisingly, education occurred at all 14 of the health fairs. Thirteen (92.9%) of the health fair coordinators reported using educational brochures from American Cancer Society (ACS), 8 (57.1%) from Susan G. Komen Foundation (SKG), 7 (50.0%) from National Cancer Institutes (NCI), and 4 (28.6%) from the CDC. Ten (71.4%) of the health fair coordinators reported using self-developed materials alone or in conjunction with other professionally developed materials (Table 3).

Health fairs provided education on other health topics beyond breast, cervical, and/or colorectal cancer. Common topics included diet/nutrition (64.3%), hypertension (50%), sexually transmitted diseases (50%).exercise/physical activity (42.9%), diabetes (35.7%), cardiovascular disease (35.7%), and tobacco control (28.6%). Clinical services were offered at five (35.7%) of the health fairs and comprised vaccinations (40%), lifestyle change counseling (20%) diet/nutrition/diabetes counseling (20%), blood pressure (20%), and eye exams (20%).

Outcomes

Twelve (85.7%) of the health fairs made referrals for screening and seven (50%) of the events provided onsite screening for breast (50%) and cervical (42.9%) cancer. Three (28.6%) of the health fairs distributed FOBT/FIT kits. Ten of the health fairs offered screening onsite or made a referral for mammograms and resulted in an average of 33.8 women (SD=22.5; range 15-90) being screened. Five events offered referrals for Pap Tests and resulted in an average of 43.2 (SD=30.4; range 15-90) women screened as identified by the health fair coordinator after follow-up data collection. The health fairs that provided FOBT/FIT resulted in an average of 36.7 men and women screened through the return of kits following the health fair. Table 4 provides additional information on health fair outcomes. Table 5 presents descriptive of all 14 health fairs. Twelve health fair coordinators concluded their health fair was successful and that their organization planned on hosting another health fair in the next 2years. The other two health fair coordinators indicated that the health fair was a one-time event and that the planning and implementation of the health fair was too time consuming and cost prohibitive to host. In addition to benefiting participants, health fair coordinators cited partnerships (21.4%), awareness of their organization (85.7%), community relationships (21.4%), and outreach (21.4%) as key reasons for holding another health fair in the future. Barriers to hosting the health fair included administrative and funding issues (28.6%), finding a location for the health fair (14.3%) and participant accessibility (transportation) to the fair (14.3%). Ten (71.4%) health coordinators made recommendations for future planning of these types of health fairs that focused on cancer screening. These recommendations included; incorporating best practices or evidence-based strategies for increasing cancer screening(40.0%), tailoring educational programs and incentives better to the population (30%), focusing more on evaluation (e.g., adding or strengthening an evaluation that would provide more insight) (30%), start planning earlier (20%) and employing more partnerships for the purposes of recruitment, screening, and implementation (20%).

Table 2 Health Fair Activities and Community Guide Strategies (n=14)

Activity	Qualitative Theme/Code	Mapped Community Strategy(s)
Pre Health Fair Activities		
Find a location	Event Planning/ Logistics	N/A
Hold meetings	Event Planning/ Logistics	N/A
Obtain funding/ sponsors	Obtain funding/ sponsors	N/A
Hold events and conduct activities to promote the health fair in order to recruit and register participants	Recruitment	N/A
Health Fair Activities		
Educational Activity	Presentation/ Lecture	Group education
Onsite Screening or Referral	Screening/ Referral	Reducing Structural Barriers, Reducing Out-of-pocket Costs
Provided meals and snacks	Meals/Snacks	N/A
Cooking demonstration	Meals/Snacks	Group education
Gave away prizes	Giveaway/Raffle*	N/A
Had an exhibit or table with educational information	Booths/Fair	Small media, One-on-One education
Had media presence such as a local radio station with music and entertainment	Media/ Entertainment	N/A
Post Health Fair Activities		
Followed up with participants about enrollment, reminders of appointments, scheduling appointments, screening results	Participant follow-up	Client reminders
Met with planning team and partners	Follow-up meeting	N/A
Compiled data for funders and wrote reports	Report writing	N/A

*Community Guide definition does not considered as a client incentive.

Five coordinators reported total costs for the health fair resulting in an average of $5663 (SD=8410, range=500-20,454). Twelve (85.7%) of the event coordinators reported using external funding to implement or supplement the costs of the health fair. Ten (71.4%) of the coordinators reported using in-kind contributions from outside the organization to implement the health fair. In-kind contributions were staff time/resources (63.6%), materials/ giveaways (45.5%), facilities/ location (36.4%), money (18.2%), advertising (18.2%).

While many health fairs in this study used mostly small media, education, reducing structural barriers, and reducing out-of-pocket costs as strategies to increase cancer screening rates, some examples of creative approaches stand out. The following case studies are examples of such innovative implementations of health fairs.

Table 3 Health Fair Education Sources and Types (n=14)

Educational Materials Used	14 (100.0%)
Sources of Educational Materials*	n=14
ACS	13 (92.9%)
SGK	8 (57.1%)
NCI	7 (50.0%)
Professional Organizations	5 (35.7%)
State/Local Health Department	6 (42.9%)
Local Hospital/Clinic	4 (28.6%)
CDC	4 (28.6%)
Avon	2 (14.3%)
Education/Health Promotions Company	1 (7.1%)
Type of Educational Materials	n=14
Breast Cancer Printed Materials	9 (64.3%)
Branded Materials	8 (57.1%)
Other Chronic Disease	7 (50%)
General Cancer Materials	6 (42.9%)
Unspecified Materials	4 (28.6%)
Cervical Cancer Printed Materials	4 (28.6%)
Tailored Materials	3 (21.4%)
Colorectal Cancer Printed Materials	3 (21.4%)
Program Materials	1 (7.1%)
Self-developed Educational Materials	n=14 10 (71.4%)
Type of Self-Developed Materials	n=9
Program or Clinic Information	6 (66.7%)
Reducing Structural Barriers	2 (22.2%)
Awareness	1 (11.1%)
Culturally appropriate of tailored	1 (11.1%)
Non-cancer materials	1 (11.1%)

Table 4 Health Fair Screening Outcomes (n=14)

Outcome	**N**	**%**
Onsite Referrals to screening	12	85.70%
How referrals were made		
Specific Facility or Medical Practice	8	72.70%
Local Health Department	4	36.40%
Nurse Practitioner or Allied Health Professional	1	9.10%
Cancer Screenings Provided On-Site	7	50.00%
Breast* (n=7)	7	100.00%
Cervical**(n=7)	3	42.9
Colorectal (n=7)	2	28.60%
FOBT ***(n=7)	1	14.30%
FIT ****(n=7)	1	14.30%
Follow-up for Test Results	7	100.00%
Follow-up for Abnormal Test Results	7	100.00%
Screening Costs Covered	7	100.00%
Other Cancer-Related Clinical Services Provided (n=3)		
Clinical Breast Exam	3	100.00%
Pelvic Exam	1	33.30%
PSA Test	1	33.30%

*Mammogram.

**Pap Test.

***Fecal Occult Blood Test.

****Fecal Immunochemical Test.

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Table 5 Health Fairs at a Glance

Cancer's addressed*	Event duration (hours)	Event location	Host organization (s)	Target population	Participants attended	Strategies**	On-site screening	Number screened	Event frequency
CRC	20 (over 2 days)	School	Local tribal organization	Adults 50+	100	1 to 1, SM, ROPC	No	-	Reoccurring annually
CRC	3	Community based organization	Academic, local non-profit	African American population	121	1 on 1, GE, SM,	No	B: 22 C: 22 CRC:2	One time
B	6	Religious institution/ faith-based org	Clinic, local non-profit, faith based org	Hispanic, uninsured	46	1on 1, SM, RC, ROPC	Yes, B	B: 46	Recurring annually
B, C, CRC	6	Hospital or clinic	Clinic	Hispanic, uninsured	202	1 to 1, GE, SM, RC, CI, RSB, ROPC	Yes, B, C, CRC	B: 45 C: 56 CRC: 98	One time
B	4	Workplace	Local for-profit	Adult population	200	1 to 1, GE, SM	No	B: 33 C: 33	One time
B	3	Hospital or clinic	Non-profit	Hispanic women	250	1 to 1, GE, SM, RSB, ROPC	No	-	Recurring annually
B	3	Hospital or clinic	Clinic	Low-income, minority groups	68	1 to 1, GE, SM	No	B: 18	Recurring quarterly
B, C	5	Religious institution/ faith-based org	Clinic	Hispanic population	175	GE, SM, RCB, ROPC	Yes, B, C	B: 90 C: 90	Recurring annually
B	6	Community based organization	Health department/ local gov	Un-/Under-insured	300	1 to 1, SM, RC, RSB, ROPC	Yes, B	B: 22	Recurring annually
B	16 (over 2 days)	Mall	Clinic, academic	Women 40+	65	1 to 1,SM, RC, ROPC	Yes, B	B: 32	Recurring annually
B, C, CRC	4	Hospital or clinic	Clinic, academic, other	Women 40+	15	1 to 1, SM, ROPC	Yes, B, C	B: 15 C: 15	Recurring annually
B, C, CRC	9	Hotel	Clinic, professional org	Un-/Under-insured	1200	1 to 1, GE, SM, ROPC	Yes, B, CRC	B: 26 CRC:10	Recurring annually
CRC	7	Outdoor Venue	Non-profit, professional org	General population	200	1 to 1, GE, SM	No	-	One time
**B	2	Hospital or clinic	Non-profit	General population	200	1 to 1, SM	No	-	Recurring annually

B, breast cancer; C, cervical cancer; CRC, colorectal cancer; 1 to 1, one-to-one education; GE, group education; SM, small media; RC, reminder calls; RSB, reducing structural barriers; ROPC, reducing out of pocket costs; CI, client incentives

Health fair case study

A Plethora of Partners: The Cancer Prevention Fair was held at a regional Cancer Center in Waukesha, WI in 2011. The goal of the health fair was to increase the number of underserved men and women who receive breast, cervical, and colorectal cancer screening and prevention education. The location of the fair is considered urban and the majority of the population is white. The fair targeted Hispanic men and women who were uninsured or underinsured through outreach activities including targeted mailings, flyers, and

posters. The recruitment occurred at community organizations, through health promoters and on the Cancer Center's website. A total of 202 participants attended the fair. Of those participating in the health fair, 92% were white, 4% were African American, and 4% Asian. Of the 92% white, 31% were Hispanic/Latino. The majority of participants were female (75%) and age ranged from 7-84years. Partners for the fair were the American Psychological Association's Socioeconomic Status Disparities Program, Wisconsin Comprehensive Cancer Control Program, National Cancer Institute Community Cancer Program, the Hispanic Community Resource Center, the University of Wisconsin, Well Women Program, Pro Health Care, private medical and dental practitioners, Susan G Komen, and Waukesha Memorial Hospital Foundation. Partners' roles included planning for the health fair, providing education and materials, staff and resources, and providing screening onsite and at follow-up. Community Guide Strategies were used during the fair and included one-on-one education, group education, small media, client reminders, client incentives, reducing structural barriers and reducing out of pocket expenses. Registration for the health fair was conducted in advance and onsite. Free screenings (Mammography, Pap Tests, and FIT) were provided onsite and resulted in 45 (onsite), 22 (follow-up) mammograms, 56 (onsite) Pap Tests, 98 FIT (follow-up), and 2 colonoscopies (follow-up). Participants who returned the FIT following the health fair received a $15 gift card for a local grocery store. Zumba, yoga, cooking and exercise demonstrations, smoking cessation, and group presentations were offered at the fair in addition to 21 educational displays that offered free healthy food sampling. Educational topics included tobacco prevention and control, STI prevention and sexual health, nutrition and physical activity. Education was delivered by community outreach coordinators, health promoters, dieticians, and genetic counselors. Spanish translational headphones were issued to all participants with low English proficiency and all educational pamphlets, brochures, and other materials were available in English and Spanish. Bilingual patient navigators were onsite to help participant's complete screenings and were an integral part of the follow-up process. In case of a positive test result, a patient navigator called the patient within 2 days to set up an appointment and provided a patient reminder call prior to the appointment. In addition, patient navigators sent all participants result letters despite a positive and negative result within a month of the fair with reminders of when they will need to have the next screening and followed up by phone after two weeks for all participants who did not return FITs.

The health fair coordinator indicated that the health fair was very successful in increasing the number of cancer screenings in the community and strengthening community partnerships. One of the key elements to the health fair's effectiveness was having a multiple free onsite screenings and patient navigators who followed-up with each screened participant.

A local connection: The West Virginia University (WVU) Healthcare Health Expo is a 2-day event that occurs annually in Morganton, WV. The event is held at a local mall and provides health screenings including blood pressure, bone density, BMI as well as nutrition counseling and education on a wide variety of health topics (diabetes, hypertension, cardiovascular disease). The WVU Cancer Center partnered with the County Health Department to sponsor a health fair at the Expo with the goal to educate women about the importance of good breast health and to provide clinical breast examinations and mammograms. Recruitment for the health fair occurred in Morganton and the rural areas surrounding it. Women 40 and older were recruited through newspaper ads, local TV, radio, and through pre-registration at the Cancer Center. Community Guide strategies used included one-on-one education, small media, client reminder calls, and reducing out of pocket costs. Clinical breast exams and mammograms were offered onsite and resulted in 68 clinical exams and 34 mammograms. Referrals for Pap Tests were made onsite by nurses, medical residents, and providers. Patient navigators followed up with participants from the health fair, scheduled appointments and confirmed that participants completed the recommended screening(s).

Educational materials from Susan G Komen, American Cancer Society and National Institutes of Health were distributed. Funding for screening was primarily supported by a private donation. Education and other costs were supported by the Cancer Center and the National Women Foundation. The health fair coordinator reported the fair as successful in reaching at-risk and hard to reach women. A challenge of the health fair was creating a "private area" where the women could feel comfortable in a busy shopping environment.

A visual learning experience: Healthcare for Alaska Native people is provided by regional tribal health organizations. One of the northern Alaskan tribal health organizations holds an annual health fair to encourage healthy behaviors among all community members. The location of the fair is rural and of those participating in the health fair, 50% are Alaska Native people (25% white, 25% other). The majority of participants are between 35 and 65years old. In 2011, to educate community members about colorectal health, the health fair organizers had a section of the health fair which combined a giant inflatable colon ('Nolan the Colon') through which participants could walk while learning about the development and prevention of colorectal cancer, a health educator who provided educational sessions, and a clinician who answered clinical questions about colorectal cancer and referred patients for screening. In addition, participants completed a pre/post survey that assessed participant knowledge, intention to get screened, and comfort level when talking with friends and family about colorectal cancer screening.[30] Community Guide strategies used during the event included one-on-one education, group education, and small media. Out of 110 participants, 89 were referred for screening to providers that offered free or reduced cost screenings. Reminder calls to identified patients were planned approximately one week following the event.

The funding for the colorectal prevention event at the health fair was predominantly provided by the Centers for Disease Control and Prevention's Colorectal Cancer Control Program which covered shipping of the giant colon and health educator time and travel costs. The regional tribal health organization provided the clinician time, and other local organizations such as Head Start provided in-kind contributions at the health fair such as giveaways and refreshments. The pre/post survey responses indicated that the health fair was successful at increasing knowledge and awareness of colorectal cancer; however, the actual screening rates resulting from health fair participation were not evaluated. Some recommendations for health fairs that seek to increase colorectal cancer screening among community members are to use onsite scheduling for screening or onsite provision of FOBT/FIT in combination with the Giant Colon to encourage participants to not only increase their awareness of the need for screening but also facilitate their ability to complete the process.

Discussion

This study aimed to identify goals, components, and outcomes of health fairs that are being implemented to increase cancer screening in the U.S. Some health fairs addressed more than one type of cancer and had large reach especially to minority or underserved communities. This reach to underserved populations has been reported in other

studies.[15,31,32] Most coordinators had goals of reaching a broad audience to increase cancer/cancer screening awareness, screening program enrollment, and to create partnerships and fulfill grant requirements. Almost 80% partnered with hospital or clinics with the conduct of the health fair. This relationship is important since there is great interest for linkages between public health and medical care.[33] We also saw frequent use of patient navigators at these events for education and referrals.

Health fairs are complex events with many activities in the planning, implementation and follow-up phases. In this study, we learned about key activities in the planning and follow-up phases such as evaluation and participant reminders for screening not reported often in the literature. These health fairs often provided other health education and screening services to their participants as seen in other studies.[13,34] This role of health fairs is important since many participants recruited at these health fairs are older adults who may have multiple chronic conditions.[35]

Most health fairs employed Community Guide strategies such as small media, one-on-one or group education, and reducing structural barriers. This finding is consistent with a previous systematic review on special events to promote cancer screening.[26] It seems that the combination of education, small media, and reducing out of pocket costs are core components of health fairs to promote cancer screening.

Moderate effectiveness of health fairs to increase cancer screening was demonstrated in this sample with an average of 38 people screened per event. These data show that health fairs do lead to screening. Furthermore, half of the fairs provided onsite screening and three fourths also made referrals for clinical appointments. Linkages created by referrals could ensure screening success with primary health care for repeat screening.

We found that only 71.4% of event coordinators evaluated outcomes of the health fair, while all conducted process evaluations by collecting data on attendance, number of materials distributed, and number of participating organizations. Further research to evaluate health fairs and their long-term effects will be beneficial to health professionals charged with community outreach.[13,14] Additional research should also examine the cost effectiveness of health fairs in terms of investment per cancer screening.

Several limitations exist in this study. The generalizability of the data on health fairs may be limited since we only reported on 14 events. Recruitment of health fair coordinators was through national, regional, and local networks around the U.S. but may not represent the population. In addition, the data on health fair implementation and screening were based on self-report of the fair coordinators and were not validated. Despite those limitations, the interviews were extensive and great depth of knowledge was gained about the use of these fairs to impact cancer screening and education.

Conclusion

However, this study broadens the understanding of health fairs for cancer screening significantly beyond the few reported in the peer-reviewed and grey literature. Health fairs are providing cancer education and increase cancer screening. Further evaluation is needed to better understand more short-term and long-term effects of this common health promotion strategy.

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Conflict of interest

The author declares no conflict of interest.

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