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Increasing Colorectal Cancer Screening Awareness: An Innovative Participatory Intervention

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Abstract

Among American men and women, colorectal cancer (CRC) is the third most commonly diagnosed cancer as well as the third leading cause of cancer death. The importance of CRC screening is supported by improved survival rates associated with early diagnosis. Despite these well known facts, half of eligible adults in the United States have not been tested. This paper reports on a novel intervention utilizing a uniquely designed community-based CRC education program to promote CRC awareness and increase participant's intention to participate in CRC screening. Trained teams of oncology nurses worked with senior level nursing students who provided a two-tier intervention that engaged both children and adults. Surprisingly, a survey of participants indicated that within this sample, screen rates were 84.1%. This is higher than the Healthy People 2020 screening target of 70.5%. Participants in the educational intervention program still reported the program increased their awareness of CRC and the need for screening. Results also show that a doctor's recommendation influences a person's decision to participation in CRC screening.

Introduction

This paper describes the development and evaluation of a community-based intervention. The goal of the partnership was to increase colorectal cancer screening awareness and intention to participate in CRC screening. The paper describes the process of developing, planning, and implementing this service-learning project that involves engagement from local nursing professional organizations, nursing students, and stakeholders. Innovative educational programming needs specific to the aggregate population's needs were developed regarding CRC screening, and delivered within the community. The long-term goal of this team is to continue the work to implement effective strategies that increase CRC screening for at-risk and underserved populations that will lead to early detection and decrease mortality from this disease.

Colorectal cancer (CRC) is the third most commonly diagnosed cancer and also a second leading cause of cancer-related death among men and women in the United States (American Cancer Society, 2009; Centers for Disease Control and Prevention, 2009). Approximately 565,650 Americans will die from colorectal cancer and another 1,437,180 new cases will be diagnosed in 2008. In Michigan in 2007, there were nearly 1,800 deaths from CRC and more than 5,000 individuals newly diagnosed with CRC (Michigan Cancer Consortium, 2011).

Among American men and women, colorectal cancer is the third most commonly diagnosed cancer as well as the third leading cause of cancer death (American Cancer Society, 2009; Centers for Disease Control and Prevention, 2009). African American men and women have the highest rates of colorectal cancer (CRC) diagnosis and death, followed by Whites, Asian

American/Pacific Islanders, Hispanic/Latinos, and American Indian/Alaskan Natives respectively (American Cancer Society, 2009).

Colorectal cancer screening can reduce morbidity and mortality by detecting both precancerous polyps and cancers early (Hardcastle et al., 1996; Kronborg, Fenger, Olsen, Jorgensen, & Sondergaard, 1996; Mandel et al., 1993; Shelton, 2002). CRC screening is recommended for individuals age 50 years and older (U.S. Preventive Services Task Force, 2002). Maciosek, Solberg, Coffield, Edwards, and Goodman (2006) estimated that routine screening for CRC could prevent 18,800 deaths per year, yet according to Ferreira et al. (2005) screenings for CRC are the least utilized cancer screening tests in the United States. According to the American Cancer Society's Colorectal Cancer Facts and Figures for 2008-2009, half of the people in the United States aged 50 or older have not been tested. CRC screening rates are low in the general population (Seef, Nadel, & Blackman, 2003), and African Americans and Latinos have even lower rates than Whites (Breen, Wagener, Brown, Davis, & Ballard-Barbash, 2001; Etzioni et al., 2004). There is an evident need to increase CRC screening.

The American Cancer Society (2009), and the American College of Gastroenterology (2010), and others (Mahon, 2009; Rex, Johnson, Lieberman, Burt, & Sonnenberg, 2000, Winawer et al., 1997) have recommend the following screening for average-risk men and women beginning at age 50:

1. Guaiac based fecal occult blood test annually.
2. Flexible sigmoidoscopy every five years.
3. Double contrast barium enema every five years.

4. Colonoscopy every ten years.

Of the above screening options, colonoscopy remains the “gold standard” according to the American College of Gastroenterology, the Department of Health and Human Services (2010), and Medical News Today (2010). Colonoscopy is recommended because polyps can be identified and removed during this single procedure.

Early detection of pathology in the CRC disease process is likely to yield the best patient outcomes (Bazensky, Shoobridge-Moran, & Yoder, 2007; Shelton, 2002). Despite this knowledge, screening rates hover around 50%, according to the Centers for Disease Control and Prevention (2009). The American Cancer Society set a goal of 75% screening participation by 2020 (American Cancer Society, 2009). Innovative education programs targeted to vulnerable populations may help achieve this goal. Individuals must be aware of CRC as a potential health threat, they need to know what steps can be taken to prevent and/or decrease severity of the disease process, and they need to be knowledgeable of all screening options. Colonoscopy should be explained and encouraged as the best choice for detecting potential health risks related to CRC.

CRC Screening Issues: Screening rates for CRC remain at less than optimal levels. This is especially true in underserved populations. Review of past publications supports this fact (Agrawal et al. 2005; Davis et al., 2001; Greiner et al, 2005a, 2005b; Katz et al, 2009; McAlearney et al. 2008; Palmer et al. 2008). The reviewed literature also suggested the need for innovative programs to educate underserved communities about the risk factors of CRC and the importance of screening (Agrawal et al. 2005; Bazensky et al, 2007; Hamlyn, 2008; Mahon,

2000; Mahon, 2009; and Portelli, 2008). *Community-based* education programs was also emphasized as a priority (Gipsh, Sullivan, & Dietz, 2004; Green and Kelly, 2004; and Greenwald, 2006).

Disparities in Screening: Several studies indicated less than optimal screening levels among underserved populations (Agrawal et al. 2005; Davis et al, 2001; Green & Kelly, 2004; Hamlyn, 2008; Katz et al, 2009; McAlearney et al. 2008; Palmer et al. 2008; Shokar et al. 2005; and Shokar et al. 2008). Underserved populations include minorities, people who are un- or underinsured, those with fewer years of education, and/or low socioeconomic status. A specific example of disparity in screening is reported in Agrawal et al. (2005). That publication shows that Whites are 82% more likely to receive colonoscopy and 61% more likely to receive sigmoidoscopy than their African-American counterparts. Shokar et al. (2008) revealed screening rates of 67.5% in non-Hispanic whites compared to 54.3% in African-Americans and 48.6% in Hispanics.

Using the Behavioral Risk Factors Surveillance System (BRFSS), 22% of Michigan respondents age 50 and over reported having had a blood stool test within the past two years and 69% have ever had a sigmoidoscopy or colonoscopy. Interestingly, only 19% of those with less than a high school education had a blood stool test and 62% reported ever having a sigmoidoscopy or a colonoscopy (compared to 74% of college graduates). Racial and ethnic minorities are less likely than whites to have ever had at least one of these tests. Only 31% of Michigan men and women 50 years of age or older reported having any appropriately timed CRC screening as indicated by the Michigan Cancer Consortium recommendations. The American Cancer Society concurs that

these low rates of CRC screening within underserved populations are less than the optimal 75% screening goal hoped to be reached by 2020 (American Cancer Society, 2009).

Beliefs and Attitudes: To increase individuals' participation in screening, their personal health beliefs and attitudes must be examined (Gipsh et al., 2004). Of the studies that addressed beliefs and attitudes, many commonalities were uncovered. The belief by many minority populations that early detection does not influence the course or outcome of the disease was discussed in McAlearney et al. (2008), Palmer et al. (2008), Shokar et al. (2005), and Shokar et al. (2008). Another misconception among minority populations was that there is no need for testing if symptoms are not present (Greiner et al., 2005a; Shokar et al., 2005; and Palmer et al., 2008). Cancer fatalism, the belief that a cancer diagnosis always leads to death, is addressed as a usual phenomenon in African American communities (Greiner et al., 2005a; and Hamlyn, 2008). A general mistrust in White health care providers may decrease screening in minority populations as well (Greiner et al., 2005a; Hamlyn, 2008; and Shokar et al., 2008).

Barriers to Screening: Barriers to CRC screening include, (a) lack of screening education among the general public, (b) inadequate communication between health care providers and individual patients regarding screening importance, and (c) cost issues related to lack of, or inadequate, health care insurance. Barriers were discussed in many studies (Agrawal et al., 2005; Davis, et al., 2001; Ferreira et al., 2005; Green & Kelly, 2004; Greenwald, 2006; Greiner et al., 2005a; Greiner et al., 2005b; Hamlyn, 2008; Katz et al., 2009; McAlearney et al., 2008; Palmer et al., 2008; Shokar et al., 2005; and Shokar et al., 2008). Of reported patient barriers, lack of knowledge concerning CRC and its associated screening tests, as well as lack of physician

recommendation are mentioned most often. Other hindrances given are, embarrassment due to the nature of screening, time constraints, and inadequate health insurance. The previously noted studies also cite low socioeconomic status, low levels of education, and being of a racial or ethnic minority as demographic barriers associated with low CRC screening rates. Four studies (Argawal et al., 2005; Greiner et al., 2005a; McAlearney et al., 2008; and Hamlyn, 2008) address fear of receiving a positive cancer diagnosis as a barrier to screening.

Purpose

This project focused on increasing awareness of colorectal cancer (CRC) screening in an underserved population in Michigan. The program used participation from the community to develop the educational events. This included partnering with the American Cancer Society-Colorectal Cancer Awareness Network (ACS-CRAN), the Healthy Asian Americans project, an oncology nurses organization, a university school of nursing, and two school districts in Ypsilanti, Michigan. The program was a unique two-tiered intervention aimed at educating middle and high school students who were then to share information with older adults in their lives. Additionally, it provided a unique service learning opportunity for the nursing students. (For more information on the evaluation of the student nurse service learning component see Wu, Wozney, & Raymond, 2011.) The purpose of this paper is to report on the survey results obtained from the adults engaged by middle and high school student who participated in this community-based CRC educational program.

Methods

This program utilized unique multimedia education programs within primary education classrooms. Additionally students within the classrooms were given specific take-home materials to be shared with older adults in their homes or neighbors. The classroom interventions included brief PowerPoint lectures, videos, a letter-writing session, and evaluation games.

Senior nursing students enrolled in a community health nursing course first met with Oncology Certified Nurses to learn about CRC issues. The training for the student nurses included general planning information about the project they were participating in, the role of a community education volunteer, cancer rates among minority and underserved populations, and introduction to CRC risk factors, screening techniques, diagnosis, and treatments. The nursing students then were given the freedom to create unique age appropriate education sessions for implementation with middle school and high school students. Nursing students were generally directed to focus on CRC risk factors appropriate to their audience. Where appropriate, efforts were made to integrate key beliefs and barrier findings from the literature (e.g., importance of screening in the absence of symptoms toward early detection and improved health outcomes). Additionally, all groups were asked to incorporate a letter writing activity and distribute a folder that contained some pre-prepared take-home materials.

During classroom presentations, the middle and high school students were asked to write letters to family members and/or friends 50 years old or older, encouraging them to participate in CRC screening. Additionally they were provided with the pre-prepared take-home materials that included a CRC fact sheet with information on risks, screening options and techniques. Folders

also included a survey to be completed by an adult family member or neighbor and returned to the researcher in an enclosed pre-stamped envelope. Students were encouraged to present their letters along with the folder materials to a family member or neighbor age 50 or older.

A few weeks following the middle school and high school education sessions a celebratory event entitled Healthy Colon, Healthy Family took place as the culmination of the campaign. The middle school and high school students were given invitations to share with their family for the event. Health care professionals, community leaders, CRC cancer survivors, and project participants spoke during the event and shared experiences and expertise to reinforce importance of CRC screening. Door prizes were provided to encourage event attendance.

Human Subjects Internal Review Board approval was obtained prior to beginning the program.

Design: This is a pre-experimental action intervention that seeks to increase CRC awareness. It is also characterized by Burns and Grove (2005) as a one-group posttest-only design. A treatment exists in the form of the educational intervention, yet there is no control or comparison group.

Study Population, Setting, and Sampling: The study setting resided in two school districts that were ethnically diverse in southeastern Michigan. School district A reported the distribution of student ethnicity as 30% white, 63% black, and 17% of others. The ethnicity distribution reported by School district B noted students as 32% black, 62% white, and 6% other. The median household income for district B was also reported to be lower than average for the

county. In fact, 58% of student population in district A as classified as “Economically Disadvantaged” (National Statistics for Educational Statistics, 2010). The County health reports showed that although rates of CRC diagnosis are decreasing for the overall county on average, one of the highest incidences remains in the geographic area where these two school districts reside. Evidence from the literature suggests this study population exhibits higher CRC risk relative to their minority make-up and lower socioeconomic status.

A convenience sampling was used in this study. The sample consisted of adults solicited by a middle- or high-school student who had become a Colon Ambassador after completing the student nurse-led program at their school. Evaluation surveys were returned by a total of 126 participants. Surveys were returned by one of two methods, via pre-stamped envelopes provided to the middle- and high-school students in the take home folders, or in person by adults attending the post-educational celebration.

Survey Instrument: The current study used an survey developed by the researchers. Surveys were completed confidentially and voluntarily. Demographic information collected consisted of respondent’s age only. The survey asked participants about their past CRC screening practices, type of screening method used, if a doctor had recommended and/or ordered CRC screening in the past. Finally, participants were asked to indicate if this current educational program had increased their awareness of CRC screening, and their intention to be screened in the future. Surveys were returned by mail using a preaddressed and stamped envelope included in the take home materials. To further encourage those not returned in the mail, surveys were also available at the culminating celebration event.

Data Analysis: Data were obtained from respondent surveys following participation in the educational program. Aggregate data were compiled from surveys returned. Data were analyzed using Statistical Package for the Social Sciences PASW Statistics Version 18 software. Descriptive statistics were used to analyze and report the survey data. Chi-square test of independence was used to examine for statistically significant associations between physician's recommendation for screening and past screening participation as well as physician's ordering of screening and past screening participation.

Results

There were a total of 121 participants. Respondents ranged in age from 25 to 82 years of age. The mean age for the full sample was 54.01 years (SD = 12.25). Twenty four participants (19.8%) did not indicate their age. Given the relationship of CRC screening guidelines and age, the responses were also examined by age groups, (i.e., those under 50 years of age, and those 50 years and older). Table 1 shows the item response data for the full sample, and the two age-related sub-groups.

History of CRC Screening & Colonoscopy: CRC screening guidelines suggest a colonoscopy for people over the age of 50 at average risk. Of those participating in the study at or over 50 years of age, 84.1% reported previously engaging in a CRC screening activity. Of those who had engaged in a CRC screening activity, 93.8% had completed a colonoscopy. It was also interesting to note that 58.3% of participants under 50 years of age also reported participating in a CRC screening activity.

Past Influence of Doctor on Past CRC Screening: The frequency of doctors making a recommendation for, and for ordering a CRC screening differed by age group. For participants under 50 years of age, less than 20% had received either a doctor's recommendation or order to get a CRC screening. For those 50 years of age and older, 75.4% had received a doctor's recommendation to get a CRC screening, and 58.9% had received a doctor's order to obtain a CRC screen.

A Chi-square was used to examine for associations between the distributions of those who had received recommendations or orders from a doctor and their history of attaining a CRC screening. The findings were significant for both the association of having a doctors recommendation and having been screened in the past [$\chi^2(1, n = 116) = 36.04, p < 0.001$], and having a doctors order and having been screened in the past [$\chi^2(1, n = 108) = 38.73, p < 0.001$]. The group distributions indicated that those who received a recommendation for a CRC screening and those who received an order for a CRC screening were associated with those participants indicating having participated in a past CRC screening.

Program Impact on CRC Awareness: Of the 121 surveys returned, 111 people (94.9%) reported that the information received did increase awareness about the importance of colorectal screening. Consistent with this finding, 75.6% of participants reported that they intended to be screened for CRC in the future. Within the 50 years of age and older group, the percent of participants reporting and increased awareness (93.5%) was slightly lower than that total population while those in this age group were more likely to indicate the intention to be planning for CRC screening (83.9%).

Discussion

The data from this sample suggest that CRC screening rates are at a desirable level relative to the Healthy People 2020 goals. It was additionally somewhat surprising to note fairly high screening rates within the sample participants under 50. This could reflect members being a high-risk for CRC. The results also support the importance of the doctor's role toward influencing the engagement in CRC screening behavior. To support this practice it is important that people have a primary care provider from which they seek regular preventative care. Additionally, it will be key that primary care providers adhere to the CRC screening guidelines for recommending participation in and writing orders for CRC screening participation.

Physician recommendation was frequently cited in the literature review as encouragement for screening participation. Results from Ferriera et al. (2005) revealed actual screening participation increased by 9% following physician recommendation. This research confirmed that physician recommendation is influential in CRC screening participation. Research by Green & Kelly (2004) suggests that once an individual has participated in screening, continuation of the practice is likely.

The reports that the majority of participants found the information provided increased their awareness about CRC is also encouraging. Reaching people through community-based initiatives has been encouraged from past studies. Previous studies (Gipsh et al., 2004 & Greenwald, 2006) found that community education programs increase awareness of CRC. This program adopted a unique multi-level approach to interview with the community. Beginning by pairing practicing oncology nurses with a senior level nursing students, and then having the

student nurse teams develop and present educational material to middle and high school students, preparing them as “Colon Health Ambassadors”. Finally, the Ambassadors were to pass on their newly acquired knowledge of CRC and its recommended screening guidelines to adult family members and friends. Utilizing personal relationships between the primary education students and family members, neighbors and friends, is an intriguing aspect of this study. Information was disseminated through multiple pathways, and to many different age groups. The actual impact on the future CRC screening behaviors of the K-12 students relative to this action intervention is unknown. Reports from the nursing students suggest the programming was generally well received (Wu et al., 2011). This concept builds on findings from Palmer et al., (2008) which suggested publicly discussing CRC might decrease embarrassment and increase knowledge of screening. Ideally, educating people about the importance of CRC screening across the lifespan may increase participation when age appropriate.

Limitations inherent to pre-experimental studies pertain to this current research. Sampling limitations were also present. Convenience sampling is not representative of the general population. Additionally, social desirability, (as described in Wood & Ross-Kerr, 2006) may also produce a margin of error. The context for the information delivery may have encouraged respondents to report being interested in the programming, and report positive intentions for future screening.

Colorectal cancer is a very real threat to the health and well-being of society. Morbidity and mortality from CRC is greatly reduced when the disease is discovered in the early, more treatable stages. Screening rates are improving, yet a need persists for accurate public education,

especially in communities with higher risk and lower screening rates. This study provided a unique and effective educational intervention. Examining health care practices among communities and orchestrating educational programs to fit individual community needs may continue to increase awareness of this country's third deadliest cancer.

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Table 1: Percent (*n*) Participant Responses on CRC Screening Survey Items

	Total (<i>n</i> = 121)	Under 50 (<i>n</i> = 34)	50 & Over (<i>n</i> = 63)
Age [Mean, (SD)]	54.01 (12.55)	40.62 (6.25)	61.24 (8.47)
Had previous CRC Screen	62.8 (76)	58.3 (14)	84.1 (53)
Of those screened, who had a Colonoscopy	91.3 (63)	85.7 (6)	93.8 (45)
Doctor has recommended a CRC Screening	57.3 (67)	18.2 (6)	75.4 (46)
Doctor has ordered a CRC Screening	44.0 (48)	15.2 (5)	58.9 (33)
Materials did increased CRC awareness	94.9 (111)	97.1 (33)	93.5 (58)
Are planning to be Screened	75.6 (90)	55.9 (19)	83.9 (52)