

Improving Early Prostate Cancer Screenings in African American Men

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Abstract

Introduction: African-American Men (AAM) have a high incidence of morbidity and mortality related to prostate cancer (PrCa). The rate of incidence for AAM developing PrCa is 60% higher and the mortality rate is 2-3 times higher than Caucasian men. The outcome goal of this PrCa health promotion project was to improve discussions about PrCa screenings between the healthcare provider and participants during a shared decision-making exchange.

Method: Databases from 2009-2016 and 2004 were accessed to perform literature review on PrCa screenings for AAM. Inclusion criteria included age 45-65, English speaking, and scholarly journals. Articles included CINAHL, MEDLINE, Proquest Health and Medical Complete, and the Cochrane Library. A pretest was administered to AAM, 45 years and older, to determine baseline knowledge of PrCa. An educational intervention regarding PrCa/screenings (brochure and tip sheet) was provided to the intervention group. A posttest was administered to parish participants to determine outcomes. An evaluation form was provided at the end of the sessions to determine if participants planned to discuss PrCa screenings within the next 6 months with a healthcare provider following the study.

Results: Pretest mean to determine baseline knowledge about PrCa was 71.988 (SD=12.086), posttest mean was moderately higher at 82.681 (SD=11.884). Significant paired-samples correlation found, $r=0.627$, $p<0.01$, with the results of paired-samples t-test indicating significant differences between pretest and posttest knowledge, $t(15)=-4.129$, $p<0.001$.

Conclusion: Results show individuals in the intervention group were likely to discuss PrCa screenings with a healthcare provider within the next six months (81.3%) compared with the control group (35.3%). A significant difference in scores found between pretest and posttest measures, indicating the efficacy of the intervention.

Keywords: Prostate neoplasm; African American; Screenings; Cancer

Introduction

African-American men (AAM) have a high incidence of morbidity and mortality related to prostate cancer (PrCa); yet, the rate of participation in PrCa screenings is low. The rate of incidence for AAM developing PrCa is 60% higher and the mortality rate is 2-3 times higher than Caucasian men [1]. In addition, they have a 1 in 5 chance of developing prostate cancer [2]. The incidence for AAM developing PrCa is 228.5/100,000 and a death rate of about 51/100,000 [3]. These figures are higher than any other ethnic group. It is recommended that AAM should start early PrCa screenings at the age of 45 because of their high risk status [1]. It is recommended men considered to be average risk of developing PrCa should discuss the risks and benefits of PrCa screenings with a qualified healthcare provider beginning at the age of 40 [4].

In order to reduce the risk of harms related to early PrCa screenings, the AUA has recommended that the interval for routine screenings should take place at least every two years over annual screenings to minimized over-diagnosis and false positives [5]. The U.S. Preventive Service Task Force (USPSTF) recommends against PrCa screenings in men 75 years and older [6]. In addition, the USPSTF found few benefit in early detection and treatment in men younger than 75 years old [6]. Several years ago, the USPSTF issued a controversial recommendation that routine PrCa screenings should be discontinued altogether. The recommendation was issued regardless of overwhelming evidence in literature indicating AAM are disproportionately impacted by PrCa far more than Caucasians and other ethnic groups. One important rationale for this screening recommendation was the USPSTF believed screenings could lead to significant risk for harm due to false positives; however, patients still prefer such harm from screenings over PrCa that results in mortality [7].

Essentially the USPSTF believed that patients might be over diagnosed and treated for a cancer that is deemed to be indolent or slow growing [7]. The recommendation by the USPSTF was not received well by the AUA as it believed this decision was not based on sufficient evidence-based research. However, recently, and once again, the USPSTF has altered its guidelines for PrCa screenings. This change now includes a recommendation that men between the ages of 56 and 69 should discuss the appropriateness of PrCa screenings with a healthcare provider. This recent recommendation has been upgraded from a grade D to C. A grade C means that the USPSTF recommends selectively offering PrCa screenings to individual patients based on professional judgment and patient preferences. Conversely, a grade D means that the provision of a particular screening service is discouraged [8].

Public health organization's effort to achieve population health through preventative strategies is undermined due to a lack of adequate funding [9]. In 2013, the government spent approximately \$1.877 trillion on healthcare cost and is projected to increase to \$3.642 trillion dollars by 2024 [10]. Moreover, the government's share of healthcare cost in 2013 was approximately 64.3% and will rise to 67.1% by 2024 [10]. To reduce the exorbitant cost of healthcare, improving population health is an effective strategy to achieve this objective.

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Moreover, less than 5% of healthcare expenditures of U.S. dollars are spent on public health, while curative treatment is approximately 95% [11]. The nation's wealth and government spending is adversely impacted by out of control healthcare spending [12]. Despite the high cost of healthcare, the U.S. still ranks low on key health indicators [13]. Most of the monies spent on healthcare involve highly technological, expensive specialized medicine which continues to financially burden our healthcare system, yet our return on investment (ROI) is dismal. Very little monies are allocated towards health promotion and disease prevention services. An appropriate strategy to improve the health of Americans is through early screenings which can result in less utilization of costly healthcare services. This reduction in utilization of services can lead to lower overall healthcare cost. Early PrCa screenings is just one of many strategies that can curve the cost of care by early detection which can result in a reduction in advanced cancer diagnosis.

Literature Review

A literature review accessing a variety of databases provided a rich source of data and resulted in a more comprehensive review on PrCa screenings for AAM. Databases included CINAHL, MEDLINE, Proquest Health and Medical Complete, and Cochrane Library. The articles focused on raising awareness of PrCa and screenings for AAM age 45 and older. Key words and search terms included a combination of shared decision-making, prostate cancer or neoplasm, African American men or black men, prostate cancer screenings, and health promotion. Several articles involved qualitative studies because it was essential to understand the personal experiences of AAM involving their feelings and beliefs about PrCa and screenings. With findings from the literature, an intervention was developed to improve early cancer detection in AAM. The inclusion criteria comprised AAM 45 years and older, who were able to read, write, and understand English, and who did not participate in routine or recommended PrCa screenings. The exclusion criteria involved white, Latino, and Asian men since they do not have the same proclivity of developing PrCa. Additional exclusion included AAM who routinely receive screenings based on expert recommendations (every two years), and who have been diagnosed and treated for prostate cancer.

Educational interventions aimed at increasing the knowledge-base of AAM in community settings, such as parishes, barbershops, and community centers demonstrated positive outcomes [14]. Researchers discovered an increase in participation and knowledge in shared decision-making when comparing pre-and-post-education answers. Moreover, it was found that these settings were found to be ideal venues for successful recruitment for this high risk group.

Researchers implemented a Community-based Participatory Research (CBPR) program to increase PrCa screenings amongst AAM [15]. The program is a collaborative process that connects inner-city AAM to free PrCa education, physician counseling, and screening opportunities. "The academic-community partners on this community outreach initiative worked collaboratively to contextualize a local public health issue and coordinated shared resources to develop and implement a culturally acceptable outreach program" [15]. The study found that three-fourths of those who participated were first-time screeners. In addition, many participants who did not screen had an informed screening discussion with one of the attending urologist.

Method

Setting

This study took place at two local Jacksonville, Florida parishes.

One of the parishes is located near historic Springfield in northwest Jacksonville. The other parish is located on the south side of the city. The leadership of both parishes consists of pastors (the head), elders, ministers, and deacons. The facility where the intervention took place was of modest size and the location was considered safe and appropriate. Access to an auditorium and dining area was given to provide information about the study to the intervention and control groups. Both facilities had good lighting and comfortable temperatures. Comfortable seating arrangements were other reasons for selecting these areas.

Stakeholders included pastors, elders, ministers, deacons, members of both parishes, and visitors. The men and women of these parishes were asked to encourage male family members to participate in this health promotion project. The pastor provided the PI with access to members and aided in the facilitation of the study. Typically, parish members hold their spiritual leaders in high regard. Parish leaders encouraged male members to participate in this health promotion study and were instrumental in its success. A successful intervention can result in saved lives and improved health outcomes.

Research design

A convenience sample was obtained from two separate parishes. The study employed a quasi-experimental research design approach to examine the effects of a PrCa educational intervention on improving early screenings using a shared decision-making approach.

Informed consent was provided to the intervention and control groups prior to administering the demographic survey. The pretest and posttest were administered to the intervention group. Participants in the intervention group were encouraged to complete the pretest while physically present at the parish facility. The educational intervention was provided following the pretest. The educational intervention consisted of a PrCa informational brochure from the center for disease control (available upon request) that was used for the purpose of increasing the participants' understanding of PrCa and the importance of early screenings. Moreover, a supplemental tip sheet with information about PrCa and screenings was provided to further enhance the group's understanding about the adverse effects of prostate cancer. Afterwards, a post-test (consisted of same content in pre-test) was administered to assess knowledge acquisition.

The control group only received the usual care. For the usual care group, a document was developed and administered that provided information about the importance of periodic screenings for prostate cancer, colorectal cancer, and diabetes. For the outcome measure, a 20% difference was set as the target goal. In particular, the proportion of men in the experimental group who plan to speak with a healthcare provider about PrCa screenings within six months following the educational intervention would be at least 20% or more compared to the control group. Rather than making a blanket recommendation that all AAM should be screened for this condition, the PI believed it would be more prudent to assess the need for screening on an individual bases after a discussion with a qualified healthcare clinician.

Study population

In total, 33 participants participated in this health promotion study. There were 16 participants in the intervention group and 17 in the control group. The groups comprised of men without a diagnosis of prostate cancer. Socioeconomic status, family history, and educational status did not exclude participants from taking part in the project. Essentially, AAM who belonged to two local parishes along with visitors

from their perspective communities were allowed an opportunity to partake in the study.

Tools or measures

A demographic survey was developed and administered to each participant in both the intervention and control groups. This survey provided some baseline characteristics or demographics of the groups. A pretest assessment was provided to participants in the intervention group. The pretest was used to determine baseline information on participants' knowledge regarding PrCa and screenings. The assessment test consisted of a total of 14 true and false questions. The pretest and posttest consist of the same written content. The test has a Cronbach alpha of 0.84 which is a reliable tool for assessing the groups' knowledge [16]. If members missed more than two questions on the pretest, this was deemed a non-passing score. After the pretest, the intervention was administered. The intervention consisted of an informational brochure regarding PrCa and screenings along with a PrCa tip sheet. After the intervention, the group was assessed again using a posttest to determine if knowledge acquisition had been achieved.

After the intervention was completed, the PI measured (percentages as a measure) the number of AAM who committed to participate in discussions regarding the appropriateness of PrCa screenings within the next six months with a healthcare provider or were now thinking about PrCa screenings. A short evaluation form was developed that captured the outcome measures. These data provided summative information the PI needed to determine if program objectives were successful. In addition, detailed instructions were provided to the groups on the entire evaluation procedure. The study investigator was available for clarification and support via email, phone, and by onsite visits. The ultimate goal was to empower the intervention group with PrCa knowledge so that they might be prepared to participate, meaningfully, in the SDM process which can lead to the most appropriate individualized plan relative to screenings.

Statistics from the American Cancer Society and the National Cancer Institute (NCI) showed that AAM still lag behind Caucasian men in being diagnosed with localized prostate cancer at 92% versus 93%; respectively. Moreover, AAM have a greater number of late stage cancer diagnosis than Caucasian men at 5% versus 4%; correspondingly [17]. Based on this national data, the need for early PrCa screenings becomes more apparent. An important objective was to increase the proportion of AAM who participate in early screenings so that this form of cancer is discovered early, requiring less treatment. AAM who enter into a SDM relationship with a healthcare provider can close the current gap that exists today, thereby improving survival rates and reducing painful metastatic disease that requires aggressive treatment.

Statistical analysis

Initially, a series of descriptive statistics were obtained, which consisted of frequency tables reporting the sample sizes and percentages of response for the categorical measures of interest, Central tendency and variability testing is reported for the continuous measures of interest. A series of t-tests and chi-square analyses were also conducted in order to test whether group differences were present with respect to this study's measures, as well as whether differences were present between the pretest and posttest scores (Tables 1 and 2).

Results

A total of 14 variables were compared between both the intervention group and control group to determine baseline characteristics. First,

an independent-samples t-test was conducted to determine whether a significant difference in age was present on the basis of group. The 16 respondents in the intervention group were found to have a mean age of 55.563 years (SD=8.641), with the 17 individuals in the control group found to have a mean age of 56.059 years (SD=6.388). With

Descriptive statistics		
Measure	N	Percent
Social class		
Lower	5	15.20%
Working middle	23	69.70%
Upper middle	5	15.20%
Highest level of education completed		
Less than HS	2	6.10%
HS	6	18.20%
Some college	7	21.20%
College degree	13	39.40%
Post college graduate	5	15.20%
Marital status		
Married	24	72.70%
Single	9	27.30%
Whether respondent has insurance		
Yes	31	93.90%
No	2	6.10%
Father or brother diagnosis		
Yes	10	30.30%
No	23	69.70%
Last time screened		
Within the last year	14	42.40%
Greater than one year	13	39.40%
Never been screened	6	18.20%
Type of screening		
Never been screened	6	18.20%
Rectal exam only	4	12.10%
Both rectal and PSA blood test	23	69.70%
Discussed screening with HCP?		
Yes	27	81.80%
No	6	18.20%
Does the respondent have a regular HCP?		
Yes	29	87.90%
No	4	12.10%
Would the cost prevent a screening?		
Yes	3	9.10%
No	30	90.90%
Would the respondent accept treatment if diagnosed?		
Yes	31	93.90%
No	2	6.10%
Would pain associated with the screening prevent participation?		
No	33	100.00%
Whether the respondent has discussed screening with an HCP?		
Yes	7	43.80%
No	9	56.30%
Does the respondent plan to screen within six months?		
Yes	19	57.60%
No	14	42.40%
Is the respondent thinking of screening after the project?		
Yes	15	100.00%

Table 1: Demographic data.

Cross tabulation between group and planning to screen within the next six months				
Group		Plan to screen within 6 months		
		Yes	No	Total
Intervention	Count	13	3	16
	% within group	81.30%	18.80%	100.00%
	% within plan to screen	68.40%	21.40%	48.50%
	% of total	39.40%	9.10%	48.50%
Control	Count	6	11	17
	% within group	35.30%	64.70%	100.00%
	% within plan to screen	31.60%	78.60%	51.50%
	% of total	18.20%	33.30%	51.50%
Total	Count	19	14	33
	% within group	57.60%	42.40%	100.00%
	% within plan to screen	100.00%	100.00%	100.00%
	% of total	57.60%	42.40%	100.00%

Table 2: Demographic data.

regard to the independent-samples t-test, Levene’s test for the equality of variances failed to achieve statistical significance, $F=1.906$, $p=0.177$. The t-test also failed to achieve statistical significance, $t(31)=-0.188$, $p=0.852$. This indicates that there was no significant mean difference in age on the basis of group (Table 1).

Following this, a chi-square analysis was conducted in order to determine whether there was a significant association between group and social class. The chi-square analysis failed to indicate a significant association between these two variables, $\chi^2(2)=0.414$, $p=0.813$; Cramer’s $V=0.112$. The next chi-square analysis conducted focused upon the association between group and the highest level of education completed. This analysis also failed to indicate a significant association between these two measures, $\chi^2(4)=6.909$, $p=0.141$; Cramer’s $V=0.458$. Next, no significant association was found between group and marital status, $\chi^2(1)=1.137$, $p=0.286$; Cramer’s $V=0.186$ (Table 1). Additional chi-square analyses were conducted in order to determine whether significant associations were present between the remaining categorical measures included in this survey and group. The first analysis conducted focused upon the association between group and whether the respondent had insurance, with this association failing to achieve statistical significance, $\chi^2(1)=2.004$, $p=0.157$; $\phi=0.246$. The next analysis focused upon history, specifically whether the respondent’s father or brother had a positive diagnosis. No significant association was found, $\chi^2(1)=0.414$, $p=0.520$; Cramer’s $V=0.112$. Next, no significant association was found between group and when the respondent was last screened, $\chi^2(2)=1.330$, $p=0.514$; Cramer’s $V=0.201$. No significant association was again found with respect to the analysis conducted between group and type of screening, $\chi^2(2)=1.029$, $p=0.598$; Cramer’s $V=0.177$ (Table 1).

The following analysis, conducted between group and whether the respondent discussed screening with an HCP, failed to indicate a significant association, $\chi^2(1)=0.007$, $p=0.935$; $\phi=-0.014$. Next, with regard to the relationship between group and whether the respondent has a regular HCP, this failed to achieve statistical significance, $\chi^2(1)=0.004$, $p=0.948$; $\phi=-0.011$. No significant association was again indicated between group and whether the cost would prevent screening on the part of the respondent, $\chi^2(1)=0.437$, $p=0.509$; $\phi=0.115$ (Table 1).

With regard to the association between group and whether the respondent would accept treatment if diagnosed, this also failed to

achieve statistical significance, $\chi^2(1)=2.004$, $p=0.157$; $\phi=0.246$. With respect to whether the pain associated with screening would prevent participation, all respondents replied with “no” in response to this question, so no inferential test could be conducted here. A significant association was found between group and whether respondents plan to screen within six months, $\chi^2(1)=7.127$, $p<0.01$; $\phi=0.465$. Table 1 reports the descriptive statistics associated with this analysis. These results show that individuals in the intervention group were significantly more likely to plan to screen within the next six months (81.3%) as compared with the control group (35.3%) (Table 1).

Pretests were administered to subjects to assess baseline knowledge prior to the PrCa educational intervention. After the educational intervention was provided to group members, a posttest was given to determine if knowledge acquisition had improved. A paired-samples t-test was conducted in order to test whether there was a significant mean different between these two scores. The pretest mean was found to be 71.988 (SD=12.086), with the posttest mean being moderately higher at 82.681 (SD=11.884). A significant paired-samples correlation was found, $r=0.627$, $p<0.01$, with the results of the paired-samples t-test indicating that a significant increase in scores was found between pretest and posttest, $t(15)=-0.4.129$, $p<0.001$ (Table 2).

Discussion

This study examined the impact PrCa has on AAM. Moreover, this study assessed PrCa knowledge, attitudes, and beliefs in AAM in a local Jacksonville parish. The PrCa questionnaire/survey demonstrated that AAM lacked general knowledge of prostate cancer. The study demonstrated that AAM participants have a low perceived susceptibility or risk of developing prostate cancer. Because AAM have a higher proclivity of developing PrCa and having a late stage diagnosis, health promotion programs should be developed in local communities to inform AAM across the lifespan on this health concern. A lack of general PrCa knowledge can lead to AAM less likely to modify their behavior to prevent a late stage diagnosis by participating in timely screening. To increase PrCa screenings amongst this high risk group, programs must be designed to make AAM understand their susceptibility, severity, attitudes, and cues to action to enhance PrCa detection behavior.

While findings from this study are similar to research looking at PrCa in middle-age men, limitations of the study must be noted. The study was implemented during an annual health fair at the parish for the intervention group. In most cases, this would have been a great opportunity to implement a health promotion project. However, the health fair coordinator arranged an event that consisted of too many healthcare vendors; at least well over 20. Members of the parish were admonished by parish leaders to take the time to visit each table where vendors were displaying their products. This posed a significant challenge to implement the project as participants were coming in and out of the auditorium where the health promotion program was being delivered. Most of the time, the health information was continually repeated to participants which was quite distracting. This particular issue may have contributed to the small increase in post-test scores.

Participation required approximately one hour, if not more, of participants’ time. The reason for this was, on top of being required to visit other health vendors; several subjects had problems with reading health information. Because of this, the participants who found completing the surveys difficult to comprehend were assisted. According to the demographic survey, most participants had completed secondary education. However, several participants still found it difficult to

complete the surveys. Another issue during the study group members who attended the health promotion event did not have reading glasses in their possession. Therefore, additional assistance was required to help participants read survey material.

Moreover, the sample size for both the experimental and control groups were relatively small. Both parishes did not seem to have large memberships. Hence, it might be difficult to generalize study findings. A convenience sample was obtained from two separate parishes. In addition, the principle investigator (PI) employed a quasi-experimental research design approach. Randomization of participants is preferable and is the strongest approach to sampling because it represents the target population and eliminates sampling bias.

Conclusion

The literature is replete with information that demonstrates AAM are at greatest risk of being diagnosed with late stage prostate cancer. Research shows that AAM have a low PrCa screenings participation rate which results in increased morbidity and mortality. Researchers acknowledged that AAM have the highest incidence and mortality rates in the world of any racial and ethnic group. African American men have a 228.5 per 100,000 chance of developing prostate cancer. To reduce the morbidity and mortality of AAM, an evidenced-based PrCa educational intervention should be employed and implemented for this at-risk group. This educational study demonstrated an increase in knowledge acquisition and a commitment from participants that they will discuss screenings with a healthcare provider within the next six months. It is vital that the group will follow through on this commitment as screenings have shown to be lifesaving, especially since routine screenings can lead to early detection and treatment of prostate cancer.

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