

Randomized trial of print messaging: the role of the partner and monitoring style in promoting provider discussions about prostate cancer screening among African American men

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Abstract

Objective: Although African American (AA) men are at elevated risk for prostate cancer, medical guidelines do not present consistent screening recommendations for this group. However, all guidelines stress the need for screening decision making with a provider. This study evaluated the effectiveness of a brochure for the female partners of AA men, designed to help promote such discussion on the part of their mates. We also explored the effect of the partner's monitoring style (i.e., the extent to which the partner typically attends to health threats) on promoting discussion.

Methods: Female partners of AA men ($N = 231$) were randomized to receive either a prostate cancer screening Centers for Disease Control brochure for AA men, combined with a 'partner' brochure containing strategies to promote men's initiation of a provider visit to discuss screening, or the Centers for Disease Control brochure only and completed preintervention and post-intervention surveys online.

Results: The message groups did not differ on taking active steps to engage in provider discussion: relative risk ratio (RRR) = 0.99, $p = .98$; thinking about it: RRR = 1.13, $p = .74$. However, among partners who received the partner brochure, monitoring style was associated with 'thinking about initiating a provider visit' on the part of the mate (RRR = 1.74, $p < .01$). Across conditions, monitoring style was also associated with 'taking active steps to initiate a provider visit' on the part of the mate (RRR = 1.38, $p < .05$).

Conclusions: High monitoring partners may be effective in influencing their AA mates to initiate provider discussion, particularly when tailored messaging is provided.

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Received: 13 February 2013

Revised: 11 September 2013

Accepted: 23 September 2013

Introduction

African American (AA) men suffer disproportionately from prostate cancer (Pca) in terms of incidence and mortality rates [1–4]. Pca is the fourth most common reason overall for death in AA men; 19%—nearly one in five—will be diagnosed with Pca, and 5% of those will die from this disease because of an advanced stage diagnosis (Prostate Cancer 2012 available from: <http://www.cancer.gov/cancertopics/types/prostate>). The reasons for this disparity are still unclear and under active research [5]. Because AA men generally present with Pca at a more advanced stage than Caucasians, there is reason to suggest that this disparity is due to the fact that AA men receive less prostate-specific antigen (PSA) testing [6]. Indeed, a recent study concluded that more frequent or systematic PSA screening among AAs could reduce racial differences in cancer stage at diagnosis and in deaths because aggressive forms of Pca would be detected earlier, allowing for more effective treatment [7]. However, bridging the disparity gap is complicated by the fact that there is currently significant

controversy about the utility of PSA testing as a tool for Pca screening.

The US Preventive Services Task Force (USPSTF) (2012) recommends against routine Pca screening for all population groups [8] because some evidence suggests that the potential benefits derived from screening are offset by the substantial known harms. However, it is still unclear whether there may be an increased benefit from Pca screening for AAs specifically or at least a different balance of benefits and harms. Despite the fact that the USPSTF acknowledges the disparity between AAs and Caucasians in Pca mortality, it does not recommend that AAs be screened. Although recognizing the evidence reviewed by the task force, other professional groups, including the American Cancer Society (2010) [9], the American Urologic Association (2013) [10], and the National Comprehensive Cancer Network (2012) [11], recommend periodic screening or individualized screening decisions for selected categories of men at elevated risk, including AA men. These groups point out the methodological limitations of the two screening trials on which the USPSTF guidelines

were based. Specifically, men of African descent were underrepresented among participants, as were early-onset Pca cases, which represent 10% of Pca cases in the USA.

In view of this divergence, most organizations also emphasize the need for personalized, informed decision-making with a physician [9–11]. Yet, dealing with uncertain and contradictory information about disease risk management may make it difficult for at-risk AA men to actively focus on, and initiate discussion about, their personal risk and options. Indeed, previous research has shown that AA men tend to be characterized by a pattern of cognitions reflecting low knowledge about Pca issues, low perceived Pca vulnerability, and low perceived preventability and severity of the disease, which may undermine their motivation to engage in screening discussions with a provider [12–18].

Although tools have been developed for AA men to help them engage in informed decision making [19] (e.g., an educational booklet from the Centers for Disease Control (CDC) for AA men that also encourages conversation with their physician, as well as important people in their lives [20]), this information may not be sufficiently salient or compelling to address men's barriers to initiating a conversation with their provider [21]. The female partners of AA men appear to represent an important, but untapped, resource for increasing the salience of these materials. Partners can serve as motivators for their mates to encourage provider discussions and provide action strategies for doing so [22,23]. Indeed, there is evidence from other cancer contexts that the thoughts, affects, and behaviors experienced by couples in response to health challenges are the result of the combination of both individuals in the dyad [22]. Female partners, in particular, appear to play a key role in enhancing positive health behaviors in their male mates [24–28]. Therefore, the provision of supplemental risk materials, targeted to the female partner, may help them to motivate their mates to take steps to schedule a physician appointment to discuss their screening options.

The present study addressed this issue, guided by the Cognitive-Social Health Information Processing model (C-SHIP), which delineates the cognitive and affective factors involved in processing and acting on health information (e.g., knowledge, perceived risk, self-efficacy, and strategies for managing distress) [29,30]. On the basis of the C-SHIP model, the partner's individual characteristics, notably her dispositional processing style in how she selects, encodes, interprets and manages threatening medical health information, may also be relevant when designing motivational and action-oriented interventions [30,31].

In particular, in previous work, we have identified two main processing profiles: high monitoring (which entails greater attention to and scanning for threatening health cues) and low monitoring (which entails distraction from and minimization of threat-relevant cues) [32]. High monitoring has been associated with a distinctive pattern

of reactions to a variety of medical stressors and risk communications, including higher knowledge and perceived risk regarding the health threat, more negative expectations about the severity and consequences of the health threat if left unattended, and higher levels of cancer-related distress when faced with threatening medical feedback [29], resulting in higher screening rates to reduce uncertainty and exercise control [33–35].

There is accumulating evidence that the monitoring style of individuals influences decision making not only with respect to their own health threats but also with respect to the health threats of their family members [36–38]. For example, the higher the partner's monitoring tendencies, the more inclined the other member of the dyad is to make a decision to seek cancer risk information [36]. Similarly, monitoring partners are more likely to discuss cancer-related topics with diagnosed patients in their family [38]. In this study, we compared a culturally sensitive communication print message directed to the partners of AA men, combined with the standard CDC brochure, to the CDC brochure alone.

The partner brochure was developed to complement the CDC brochure by highlighting the supportive role that the partner can play in her mate's prostate-related health and provided strategies for the partner to encourage her mate to engage in a discussion with his provider. Specifically, we hypothesized the following: (i) in comparison with men whose partners received the CDC brochure only, men whose partners also received the partner brochure would be more likely to initiate a provider visit (as reported by the partner), because the partner brochure was designed to enhance the active involvement of a critical support person in promoting this behavior and (ii) monitoring style would moderate the impact of the communication message, in that high monitoring partners who received the partner brochure would be more effective in promoting a visit because they are more likely to attend to the information received and use the strategies provided to motivate their mates.

Methods

Design

A parallel, prospective, two-arm (1:1 allocation) randomized controlled design was employed. The ClinicalTrials.gov registration number is NCT01937585. Participants were allocated to the two treatment groups on the basis of simple randomization implemented through use of a computerized algorithm. Knowledge Networks, a survey research firm, performed the assignment to treatment groups, thus ensuring allocation concealment because Knowledge Networks was not involved in the conception, design, interpretation, or reporting of the study.

Sample

Participants (partners) were sampled from KnowledgePanel®, a probability-based web panel established and administered by Knowledge Networks and designed to be representative of the US population. Participants were accrued in August 2010. Inclusion criteria were the following: US female aged 18 years and older and having an AA male partner between the ages of 35 and 69 years with no history of a Pca diagnosis. A power analysis was conducted with SAS software (SAS Institute Inc., NC, USA) to determine the sample size needed to detect a moderate-sized difference between the two message groups. This indicated that a final sample of 200 was needed for a power of 80% with two-sided 5% type I error to detect an effect size of 0.58 between the intervention and control groups at the follow-up assessment [39]. Of the 2237 participants whom KnowledgePanel® panelists sent emails to, informing them of the study, 1085 (49%) responded and were screened against the eligibility requirements; of those, 341 (31%) were determined to be eligible. Our final sample size exceeded that required based on our power analysis because of substantially higher recruitment and lower attrition than projected (Figure 1).

Procedure

The Fox Chase Cancer Center Institutional Review Board approved this study. The trial protocol is available upon request from the authors. Women who met the eligibility requirements and agreed to participate were asked to consent after they read the study-specific consent form online. After consent, participants completed a baseline survey online and were randomized to one of the two communication message groups. Within 3 days of being consented, partners were mailed either the partner brochure, combined with the CDC brochure ($N=166$) or the CDC brochure alone ($N=166$). One hundred and twenty two control participants and 109 intervention participants completed the follow-up survey between 3 and 4.5 weeks later. Panelists received a small monetary incentive at the completion of their participation.

Communication messages

Centers for Disease Control brochure

Developed by the CDC specifically for AA men [40], the brochure contains 2548 words on 19 pages, has a Flesch–Kincaid reading age of 7.6 years and covers the following topics: the prostate; causes, prevention, and symptoms of Pca; risk factors, including the increased risk of AA men; issues around the pros and cons of screening and follow-up regimens; Pca therapies and side effects; and the fact that the decision to undergo screening is an individual one.

Partner brochure

The partner brochure was developed by the research team (on the basis of the health education principles and guided

by the C-SHIP model [30], focus group testing, and prior research [41,42]) and was designed to complement the CDC brochure. It contains 895 words on one triple-column page and has a Flesch–Kincaid reading age of 7.6 years. The material is directed to the female partner and explicitly articulates how the partner can address her mate's cognitions, affects, and action plans to overcome her mate's barriers to initiating a visit. The brochure uses a 'coping' role modeling scenario, wherein a woman describes the motivational and action strategies she used to promote discussion with the physician on the part of her mate. For example, the partner relates dialog that she had with her mate in which she addressed his cognitive–affective barriers to discussing Pca screening with his doctor (i.e., his low perceived vulnerability to Pca, low self-efficacy, and high risk-related distress and avoidance). Specifically, she describes information that she learned about her partner's risk for Pca, the controversy surrounding screening, and the pros and cons of screening that a man should discuss with his provider to make an informed screening decision. She then describes her mate's barriers to this information, how she addressed them, and that her mate ultimately went to his doctor and obtained the information that he needed to make an informed decision.

Measures

Background variables

Partner demographic information (age, education, marital status, and employment status) was provided by Knowledge Networks from their KnowledgePanel® database. The mate's family history of Pca was assessed at baseline using one item with a three-point response scale (i.e., 'To the best of your knowledge, does your spouse/partner have any first-degree relatives (father, brother, son) who have been diagnosed with prostate cancer?'; response scale: 'yes, no, or do not know').

Outcome variable

Actions to initiate provider visits to discuss Pca screening was assessed at follow-up using an author-constructed item that asked the partner to indicate which of seven statements most accurately described the mate's actions at follow up. We categorized the seven statements into three groups as follows: active steps to initiate a provider visit to discuss Pca screening (i.e., attended an appointment in which he had a discussion with a doctor or other healthcare provider to help him make an informed decision about Pca screening, scheduled such an appointment, and took one or more steps to schedule such an appointment), thinking about initiating a provider visit to discuss Pca screening (i.e., said he intends to schedule such an appointment, said he intends to have a discussion with his provider at his next scheduled appointment, and said he is undecided about scheduling such an appointment),

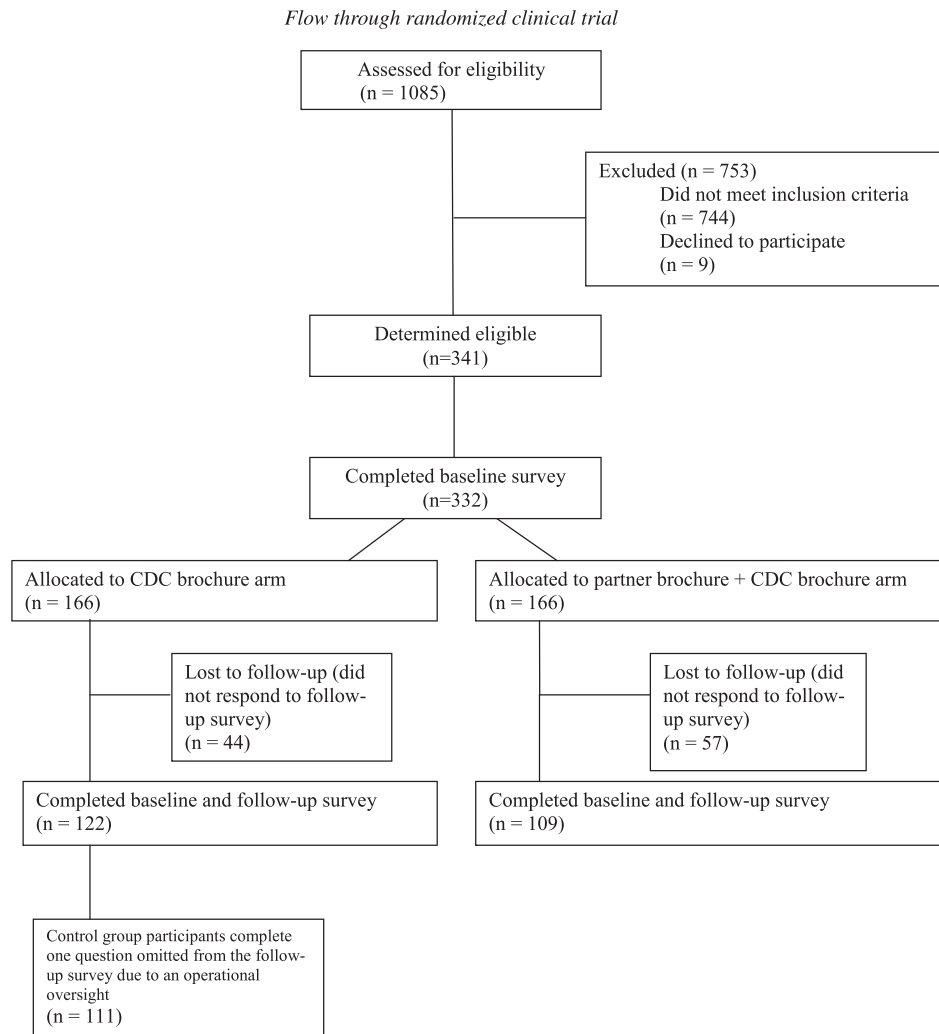


Figure 1. Flow through randomized clinical trial

and decided not to discuss with the provider (i.e., said he does not intend to schedule an appointment with a healthcare provider to help him make an informed decision about Pca screening). Response rates in these three categories were, respectively, 21%, 46%, and 33.1%.

Predictor/moderator variable

Monitoring style was assessed at baseline using the short form of the Monitoring-Blunting Style Scale [43], which includes two structured stress-evoking scenarios (e.g., going to the dentist), each followed by eight statements describing what an individual might do in the scenario, four of which reflect a monitoring style response. Respondents are asked to endorse all the statements that apply to them. A total monitoring score (range 0–8) is computed by summing the number of endorsed monitoring style statements (Cronbach's $\alpha = 0.67$).

Because of an operational oversight, the item employed to assess the outcome variable, *actions to initiate provider*

visits to discuss Pca screening, was not included in the follow-up survey administered to participants who received the CDC brochure only; this item was subsequently administered to 111 (91%) of those participants on average one month later.

Statistical analyses

All analyses were conducted *per protocol*, that is, participants lost to follow up were not included in the analyses via statistical procedures that account for missing data; rather, only participants who completed both baseline and follow-up assessments were included in the analyses. In addition, data from the control group participants who were administered the outcome assessment on a slightly delayed basis were included in all analyses involving this variable because the time lapse was minimal. The following describes the analyses conducted. First, the relationships of background variables with the dependent variable were examined using analysis of variance for the continuous

variables and chi-square analysis for the categorical variables. Variables significantly related to the dependent variable were included as covariates in all analyses in which the dependent variable was included. Second, the two communication message groups were compared with respect to background variables and monitoring style to check for equivalence, using *t*-tests for continuous variables and chi-square analyses for categorical variables. Third, to examine the differential impact of the communication messages and the effect of monitoring on men's actions to initiate provider visits, a multinomial regression analysis was conducted. Two dummy variables were created for the dependent variable, one for taking steps to initiate a provider visit, and one for thinking about taking such steps; a decision not to schedule a visit was used as the comparison group.

Results

Background analyses

Men's actions to initiate provider visits were related to partner's age, such that men who took action had older partners ($F(2)=7.93, p < .001$). Further, men who were thinking about initiating visits had more educated partners ($\chi^2(2, 205)=21.24, p < .001$). Age and education were included as covariates in the hypothesis testing analyses. No differences were found between the two communication message groups with respect to monitoring style, demographic variables, or family history of Pca (see Table 1).

Impact of communication messages and monitoring on mate's actions to initiate provider visits

Table 1. Participant demographic and family Pca cancer medical history characteristics

	Type of communication message	
	CDC-only group (N=122)	Partner-brochure and CDC-brochure group (N=109)
Age, mean (SD)	47.97 (10.21)	45.88 (10.71)
Education (%)		
Less than college	60 (49.18)	53 (48.62)
Some college or higher	62 (50.82)	56 (51.38)
Marital Status (%)		
Married	69 (56.56)	52 (47.71)
Cohabiting	53 (43.44)	57 (52.29)
Current Employment Status (%)		
Employed	60 (49.59)	55 (50.46)
Unemployed	27 (22.31)	27 (24.77)
Other	34 (28.10)	27 (24.77)
First-degree relatives diagnosed with Pca (%)		
Yes	13 (10.92)	6 (5.56)
No	92 (77.31)	85 (78.70)
Do not know	14 (11.76)	17 (15.74)

Table 2. Impact of communication message and partner's monitoring on mate's actions to initiate provider visit

Independent variable	B	Relative risk ratio	p	CI (95%)
Level 0, 2				
Communication message	-0.02	0.99	0.98	0.39-2.51
Monitoring	0.32	1.38	0.04	1.02-1.86
Monitoring by group	-0.39	0.68	0.14	0.41-1.13
Education	0.00	1.00	0.99	0.39-2.53
Age	0.08	1.08	0.01	1.03-1.13
Level 1, 2				
Communication message	0.12	1.13	0.74	0.56-2.26
Monitoring	-0.08	0.92	0.55	0.71-1.20
Monitoring by group	0.56	1.74	0.01	1.18-2.57
Education	-1.64	0.19	0.01	0.09-0.41
Age	-0.01	1.00	0.76	0.96-1.03

Level 0 = men who had scheduled an appointment. Level 1 = men who were thinking about possibly scheduling an appointment. Level 2 = men who stated that they did not intend to schedule an appointment. Level 2 is the reference group. These analyses were performed on a total N of 231 (CDC only group: $n = 122$; partner and CDC brochure group: $n = 109$).

CDC, Centers for Disease Control.

The results are shown in Table 2. There was no main effect for communication message (taking active steps: $RRR = 0.99, p = .98$; thinking about it: $RRR = 1.13, p = .74$). The following are the percentages of participants in the two study arms, as well as across message groups, that fell into the three levels of the outcome variable (level 0: took active steps to initiate a provider visit; level 1: thought about taking active steps to initiate a provider visit; level 2: decided not to discuss with the provider): level 0—intervention arm: 44%; control arm: 56%; across message groups: 21%; level 1—intervention arm: 49%; control arm: 51%; across message groups: 46%; level 2—intervention arm: 54%; control arm: 46%; across message groups: 33%.

There was an interaction effect between monitoring and the communication message ($RRR = 1.74, p < .01$). In the partner brochure group ($n = 109$), the higher the monitoring style of the partner, the more likely that the mate had been *thinking about* taking active steps to initiate a provider visit to discuss Pca screening, when compared with mates who had decided not to schedule a visit. Further, a main effect for monitoring style was also observed ($RRR = 1.38, p < .05$). The higher the monitoring style of the partner, the more likely for the mate to *have taken active steps* to initiate a provider visit to discuss Pca screening, when compared with mates who had decided not to schedule a visit.

Discussion

This study found four main results. *First*, receipt of the educational CDC brochure, in combination with the partner brochure (which was designed to help the partner to address her mate's barriers to scheduling a discussion

with his provider), was not associated with the mate's actions. The impact of the partner brochure may have been overshadowed by the information already contained in the CDC brochure. Specifically, the CDC brochure is a comprehensive publication, targeted to AAs, that addresses a health topic of great concern to this community. Indeed, the CDC brochure is 17 pages long and contains 2548 words that convey extensive factual information in a highly digestible form. To reduce partner burden, the partner brochure consisted of one triple column page and contained 895 words that conveyed limited factual information, focusing instead on addressing strategies for influencing the mate to initiate a provider visit.

Because both the control and intervention brochures led to equivalent results, the information contained in the partner brochure may not have been sufficiently attended to or acted upon. In fact, across message groups, 21% of participants took active steps to initiate a provider visit, 46% thought about doing so, and 33% decided not to have a discussion with the provider. These findings suggest that a minority of men are inclined to take action, although almost half are contemplating action. Further, approximately one third were in the nonmotivated stage. In future research, it will be important to more systematically tease apart the components of the print materials across brochures and assess what aspects of the messages are read, used, and acted upon by partners.

Second, the results showed that the partners' monitoring style moderated the impact of the partner brochure. Specifically, among partners who received the partner brochure, the higher the partner's monitoring style, the more likely that the mate was thinking about initiating a provider visit. This finding indicates that the partner brochure, which not only provided information regarding Pca risk and screening but also explicit cues and modeling about how to handle potential barriers on the part of the mate to arranging a provider visit, was particularly well-suited to high monitoring partners. Because high monitors attend to health-related negative cues, the partner brochure may have helped them to develop and execute strategies to promote provider visits [33,44]. This is consistent with other research showing that high monitors themselves benefit most when provided with support and structured actions to motivate adaptive behaviors [33].

Third, across message conditions, the higher the partners' monitoring score, the more likely that AA men took active steps to initiate provider visits to discuss Pca screening. Individuals high on monitoring, who focus on health threats, tend to seek more information about procedures for themselves and to follow up with medical regimens [45] in their effort to reduce uncertainty and gain reassurance [32]. In other cancer contexts, high monitoring individuals are also more likely to search multiple sources for information for their relatives as well as themselves [38]. Our results extend

the existing literature in that they show that the partner's monitoring style also becomes activated on behalf of her mate to promote Pca decision making [19–21].

Fourth, the partner's age and education were also related to men's actions to initiate provider visits. Specifically, being older was associated with taking active steps to initiate a provider visit on the part of the mate. Further, higher partner levels of education were associated with the mate's thinking about initiating a provider visit. These findings are consistent with men's own age being associated with undergoing Pca screening [45], as well as with observations that men's own education levels are associated with higher awareness about prostate-related issues [46].

This study has two main limitations. First, we relied on partners' self-reports about their mates' follow-through with regard to initiating a provider visit. However, self-report has been found to be consistent with actual behavior in a number of settings [47]. Second, given the differences in the follow-up periods between the two message groups, the null finding for a differential effect of the print messages needs to be interpreted with caution. The finding that the message groups did not differ significantly on the outcome variable suggests that the impact of the brochures was equivalent, despite the small differences in follow-up timing.

In conclusion, building on earlier studies [36,46,47], the results indicate that the higher the female partner's monitoring style, the more likely the mate will take action to initiate a provider visit to discuss Pca screening. Further, the partner brochure may be more helpful to high monitoring partners in promoting action-oriented intentions among their mates. These findings indicate that female partners may be an important route to engaging AA men in shared decision making with a provider in the context of Pca risk, particularly when the partner's monitoring style is taken into consideration. They also suggest that tailoring messages to the partner's monitoring style might enhance the impact of psycho-educational interventions. In addition, communication messages designed to support the partner's efforts to promote a provider visit by her mate may be more effective when they are more integrated into existing educational materials, such as the CDC brochure.

In future work, it will be important to explore the impact of other message channels (e.g., web-based, mobile texting, or health educator-delivered) and to obtain data not only on the partner but also on her mate. These findings are relevant to other cancer risk contexts that increasingly involve controversial guidelines and preference-sensitive decision making with a health care provider [21].

Acknowledgements

This work was supported in part by DOD grant W81XWH-06-1-0099, as well as ACS grant PBP 89318, DOD grant DAMD 17-01-1-0006, NCI grant R01 CA158019, and P30 CA06927. We are indebted to Mary Anne Ryan for her technical assistance.

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