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Full Length Research paper

Analysis of perceived benefits and risks for prostate cancer screening in Saudi Arabia

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This exploratory study examined factors and decisional balance (DB) that influence participation in prostate cancer (PCa) screening in Saudi Arabia. The secondary purpose of the study is to develop the groundwork for future interventions to support at-risk men, to develop the health habit of getting a yearly prostate specific antigen (PSA) and digital rectal examination (DRE). The sample consisted of 500 Saudi men who resided in Riyadh area. Men completed two surveys and demographic data was also collected. The selected factors are demographic (age, race, marital status), structural (insurance coverage) and behavioral (screening history). No significant relationships were found for the factors and outcome for PSA, or DRE intent to screen. Further analysis utilizing Point Biserial Correlations for DB, factors and intent to screen with the PSA shows a result of a significant negative association between race and DB. A significant positive association was found for DB and having insurance and for DB and having had a previous PSA. For DB, factors and DRE intent resulted in a significant positive association with having insurance coverage and having had a previous DRE screening.In terms of research implications, Saudi health care providers should focus on the recruitment of men, in prostate cancer awareness and screening. Other roles in research is the development of reliable and valid assessment survey questions to measure patient knowledge, attitudes and cultural beliefs that can identify variations in individuals' decision making processes and benefits/risk perception.Implications for the clinical setting include PCa educational interventions as well as continuing to establish relationships outside of the clinical setting to coordinate community health efforts to provide men with resources to obtain culturally relevant information on the latest PCa developments.

Key words: Prostate cancer screening, decisional balance, perceived benefits, perceived risks, Saudi men.

INTRODUCTION

Prostate cancer is a leading cause of cancer death in men worldwide. The distribution of cancers varies significantly from country to country all over the world. The latest estimates of global cancer incidence show that prostate cancer is the sixth most common cancer in the world, the third most common cancer in men, the most common cancer in men in Europe, North America, and some parts of Africa with half a million new cases each year, almost 10% of all cancers in men (Parkin et al,1999; and Parkin et al, 2001). The incidence of cancer is rising worldwide, caused mainly by demographic factors, particularly the increasingly elderly population and, more importantly, the increasing number of cases identified following prostate specific antigen testing. It is commonly quoted that many more men die with prostate cancer than of it.

In The kingdom of Saudi Arabia, Cancer prostate occupies the sixth rank among male after Colorectal cancers, NHL, Leukemia, lung and liver cancer. There were 214 cases of prostate cancer accounting for 6.2% of all newly diagnosed cases in year 2004 . The ASR was 5.1/ 100.000 among male population. The five regions with the highest ASR Eastern region at p.3/100.000, Riyadh region at 6.7/100.000, Makkah region at 5.7/1000, Qassim region at 4.7/100.000 and Asir region at 4.1/100.000 (7).

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One major problem that may affect men's decisions for PCa screening is that screening is highly controversial due to its efficacy not being well established in randomized clinical trials (Jones et al., 2008). While professional healthcare organizations conflict in their recommendations for or against PCa screening in the general population, they all agree that men should be given information about the potential benefits and harms of screening to allow them to make their own decisions (ACS, 2007; US Preventive Task Force, 2008). Most of these organizations agree that at-risk men should be screened. It is critical to know what men perceive as the pros (perceived benefits) and cons (perceived risks) of PCa screening as well as the pros and cons that influence maintenance for screening behavior as recommended by healthcare organizations. To learn what factors influence decisional balance is fundamental to getting men to engage in PCa screening. Studies (Ashing-Giwa, 1999; Weinrich, et al., 2001, Torke, et al., 2204; and Jones, et al., 2008) posit that demographic factors, structural factors and behavioral factors affect the pros and cons in decision making regarding screening. Demographic factors such as age, race, education, marital status are salient as men decide to participate in screening. The behavioral factors of having a screening history are considered to be of great importance in the balance of pros and cons for screening. Finally, structural factors, (e.g., lack of insurance or the ability to pay for screening), may also contribute to the DB.

PSA reference ranges differ significantly according to the race of the patient. (Morgan, et al, 1996,and Shibata et.al, 1997). However, no substantial differences in PSA levels between native Japanese and Japanese-American men have been found, even though there are substantial differences in prostate cancer incidence between these two groups (Shibata, 1997). Thus, the results of a study conducted in Western countries may not directly translate into other countries practice, because of different patterns of practice (screening, referral, etc.) and racial differences with regard to the incidence of prostate cancer.

Pendleton, Curry, Kasertian, Chang, Anai, Nakamura, Abdoush and Rosser (2008) report that the characteristics of men who indicated they would seek future screening intentions were Caucasian, highly educated, had received a PSA test in the past twelve months and had a usual source of care. Nivens, Herman, Weinrich and Weinrich (2001) reports in a study (n= 1,867) with 72% of the sample being AAM, that intention to screen in a free community health setting was highly correlated with simultaneous educational sessions. These findings suggest that removing cost for screening and exposure to prostate cancer education makes a significance difference in decision-making for active screening.

The purpose of this study is to: 1) examine factors and DB that influence participation in PCa screening in Saudi Arabia.; 2) to contribute to the patient decision-making literature by examining selected factors and their relationship to decisional balance (DB); 3) identify preliminary findings that may support more definitive hypotheses generation, and 4) contribute to the literature from the perspective of preliminary findings that may support development of measures and concepts for studying how to maintain screening behavior as a habit with particular focus on Saudi men.

MATERIALS AND METHODS

An exploratory descriptive study was carried out on 500 Saudi men between ages of 40-70 who resided in Riyadh city and visited public and private GU clinics for first visit check up or follow up between Jan 2010 and June 2010. The study protocol was approved by the ethics committee of King Khaled University Hospital / KSU. Written informed consent was obtained from all subjects. Men must be Saudi, read and speak Arabic. Men under the age of 40 were excluded from the study due to the researchers desire to comply with the age guidelines for PCa screening according to the ACS. Three translated instruments with acceptable psychometric properties (α= 0.80, 0.78, respectively) were used in the study: 1) The Prostate Health Behaviors and Attitudes for Prostate Specific Antigen Screening, 2) The Prostate Health Behaviors and Attitudes for the Digital Rectal Exam and 3) Baseline demographics. The Prostate Health Behaviors and Attitudes for Prostate Specific Antigen Screening measures DB using seven pro items and seven con items. There is a total of 14 items for PSA screening. The Prostate Health Behaviors and Attitudes for the Digital Rectal Exam used to measure DB also contain seven pro items and seven con items. Again, there is a total of 14 items. Five general questions were asked regarding the respondents background, including race, age, language spoken at home, marital status and health insurance.

Background factors include age, race, marital status, screening history and future screening intention was obtained by self-report from the self- administered demographic survey. For purposes of this study race was dichotomized as African-American or Caucasian. Age was dichotomized as younger and older. Younger men were age 49 or younger and older men were age 50 or older. Marital status was dichotomized as single and married. The structural factor includes insurance coverage. The participant was asked to circle all types of insurance(s) that applied, choices being: "Public", "Private Pay", "No insurance" or "Don't know". Insurance was dichotomized into "Yes" or "No". The response of "Don't know" was included with "No" responses.

The behavioral factor of screening history asked if participants had ever had a PSA or a DRE. Question # 1 for the PSA history asked, "Have you ever had a PSA?" The responses were: 1) Yes, 2) No or 3) Don't know. If participants responded "No" or "Don't know" for the PSA screening history, they were instructed to skip to question #3. Question #3 asked respondents if they were planning to get a PSA this year. The next question, question #4 asked participants "Are you planning on getting a PSA blood test every year from now on?" The participant's response choices were "Yes" or "No".

For the DRE history question, question # 5 asked, "Have you ever had a DRE?" The responses were: 1) Yes, 2) No or 3) Don't know. If the participant's response was "No" or "Don't know" regarding their screening history for the DRE, they were instructed to skip to question #7. Question #7 asked if they were planning to get a DRE this year. The next question was question #8 asking, "Are you planning on getting a DRE test every year from now on?"

Table 1. Crosstabulation for Factors, Number of participants included for PSA Screening Intent and No Intent

Factors	N (%)	Intent	No Intent	p-vaue
Race				0.102
Caucasian	400(80%)	155	245	
African American	100(20%)	44	56	
Age				0.311
49 or younger	175 (35%)	85	90	
50 or older	325 (65%)	195	130	
Marital status				0.30
Single	50(10%)	35	15	
Married	450(90%)	322	128	
Insurance				0.622
Yes	400(80%)	205	195	
No	100(20%)	68	32	
Screening Hx				0.612
Yes	175 (35%)	110	65	
No	325 (65%)	225	100	

P= 0.05

For the question asking if they had ever had a PSA (question #1) and/or a DRE (question #3) the responses were dichotomized into "Yes" or "No" for this analysis. For the questions asking "Are you planning on getting a PSA or a DRE every year from now on?" was also dichotomized into "Yes" or "No" for the purposes of this study.

The pros and cons measure the importance of the items in the survey to determine the participant's decision to get screened with the PSA and DRE. There are seven positive items and seven negative items in the survey. Responses range from " 1 = Not important" to "4 = Very important." To determine DB, all positive scores were added then divided by seven, with seven being the total number of positive items. This procedure yielded an average measure of the items on the scale. The same procedure was utilized to obtain the scores of the negative items on the survey for PSA and DRE. The results of the procedure determined decisional balance for the pros and cons scores.

Levels of measurements are considered when analyzing categorical factors, continuous factors and dichotomous variables. To analyze association between categorical factors of race, age, MS, insurance, screening history and the dichotomous outcome of intent to screen, crosstabulation was utilized. In other hand Point Biserial Correlations were utilized to analyze categorical factors and the continuous scores of DB. Point Biserial was also conducted to analyze the relationship between the continuous scores of DB and the dichotomous factor of intent to screen. The crosstabulation statistics computes two-way tables and are reported as Chi Square test. The Chi Square tests are reported when no more than one cell in the model has an expected count of less than five.

SPSS (Statistical Package for Social Sciences) for windows 17.0 program was used for all statistical analysis.

RESULTS

Participants in the study ranged in age from 40-70 with a mean age of 52.5. There were more Caucasian than other races, 400 (80%) versus 100 (20%), respectively, more married participants, 450 (90%) versus 50 (10%), and more men with insurance coverage 400 (80%) than men without coverage 100 (20%).

Five hundred Saudi men responded to the PSA Prostate Health Beliefs and Attitudes Survey measuring the pros and cons. Neutral scores were also measured. Neutral scores of (0.00) indicate that men have an equal score of pros and cons, and therefore, no decisional

balance was determined for or against screening with the PSA. For PSA cons score, 5 (1%) of the participants responding indicated that cons outweighed the pros for PSA screening. Fifty (10%) of the participants indicated neutral scores indicating a balance between pros and cons scores and 445 (89%) indicated the pros outweighed the cons for PSA screening Table 1.

The same men responded to the DRE Prostate Health Beliefs and Attitudes Survey measuring the pros and cons. Neutral scores were also measured. As stated earlier neutral scores of 0.00 indicate that men have an equal score of pros and cons, and therefore, no decisional balance was determined for or against screening with the DRE. For DRE cons score 10 (2%) of the participants responding indicated that cons outweighed the pros for DRE screening. Seventy five (15%) of the participants indicated neutral scores indicating a balance between pros and cons scores and 415 (83%) indicated the pros outweighed the cons for DRE screening Table 2.

Crosstabulations and Chi-Square Test were utilized to analyze the relationships between the factors and the outcome in separate models for the PSA and the DRE. No significant relationships were found for the factors and outcome for PSA, and DRE intent to screen. Further analysis utilizing Point Biserial Correlations for DB, factors and intent to screen with the PSA shows a result

Table 2. Crosstabulation for Factors, Number of participants included for DRE Screening Intent and No Intent

Factors	N (%)	Intent	No Intent	p-vaue
Race				0.15
Caucasian	400(80%)	145	255	
African American	100(20%)	54	46	
Age				0.25
49 or younger	175 (35%)	95	80	
50 or older	325 (65%)	175	150	
Marital status				0.29
Single	50(10%)	25	25	
Married	450(90%)	302	148	
Insurance				0.588
Yes	400(80%)	215	185	
No	100(20%)	58	42	
Screening Hx				0.605
Yes	175 (35%)	100	75	
No	325 (65%)	255	70	

P= 0.05

of a significant negative association (p=0.003) between race and DB. A significant positive association (p=0.005) was found for DB and having insurance and for DB and having had a previous PSA. For DB, factors and DRE intent resulted in a significant positive association (p=0.005) with having insurance coverage and having had a previous DRE screening.

DISCUSSION

Screening for PCa is the most common method used in early detection of PCa. However, it is unclear how Saudi men make decisions for or against screening.

The purpose of this exploratory descriptive study was to examine factors that influence Saudi men's perceived decisional balance of pros and cons. The secondary purpose of the study was to develop the groundwork for future interventions to support at-risk Saudi men to develop the health habit of getting screened every year with a PSA and DRE.

Decisional Balance has considerable promise in describing, assessing and indicating behavior in various contexts of the basis on the perceived pros and cons of intent or no intent to screen with the PSA and DRE. The cons reflect men's concerns regarding the risk of PCa screening such as fear of the screening, feelings of embarrassment and fear of the screening. The pros reflect men's concerns regarding the benefits of getting screened such feeling good about practicing the behavior and decreasing anxiety about individual health.

The majority of the participants reported that the pro scores outweighed the neutral and cons scores in this sample of Saudi men for screening with the PSA, and DRE. This indicates that of the 500 Saudi men responding, Four hundred and forty five men had positive attitudes and beliefs for getting screened with the PSA, whereas 415 men had positive attitudes and beliefs for getting screened with the DRE. Fifty of the 500 Saudi men had neutral scores indicating that pros and cons were equal and 5 of the 500 participants indicated that the cons outweighed the pros for screening with the PSA, while Seventy five of the 500 men had neutral scores indicating that pros and cons were equal and 10 participants indicated that the cons outweighed the pros for screening with the DRE. Perhaps further development of reliable and valid culturally component instruments to measure perceived risks and benefits that would include a prior education intervention could provide more insight into the neutral and con scores of this population for screening with the PSA or DRE.

Age and race were not a significant factor for PSA, or DRE intent to screen. Age not being significantly related to intent is cause for concern, especially since recommendations for PCa screening suggest staring at age 50 for men with a life expectancy of ten years and age 40 for other at-risk men (ACS, 2007). In addition, literature reports that the lifetime risk of developing and dying from PCa rises substantially among men after age 50 (Papatsoris and Anagnostopoulos, 2008) plus, a two-fold increase of risk exists for at-risk men.

There may be several reasons why age did not show a relationship with intent to screen with PSA, or DRE. First, there may be a lack of knowledge regarding PCa in this study population. One could argue that since the men did visit GU clinic, they at least had some minimum knowledge that screening was an appropriate health behavior. However, what may have been lacking in the their knowledge is recommended screening guidelines pertaining to age, prevalence of PCa in Saudi men and

that Saudi men are more likely to be diagnosed at younger ages with more advanced stages when compared to other people of the same age group.

Men in this study may also be unaware that family history is a risk factor for development of PCa, and finally, risk of developing PCa increases with age. Perhaps this finding may be an indication of previous studies. Chiu, et al., (2005) report that men 50 years or older decreased participation in PCa screening. Myers et al., (2000) suggest that as men age they may lack the ability to navigate the health care system to seek care and obtain information on health promotion and disease prevention. In addition, Myers, et al (2000) report in a study of AAM (N=548) that men who were 50 years or older were significantly less likely than younger men to report intent to screen with the PSA. While these findings may be supported, it is unsettling to perceive that at age 54, these men have already started to decline in participation in health promotion activities. Yet, maybe the larger concern is that they have had little, if any, participation in early detection and health promotion as indicated by 55% (n=265) of the men reporting that they had not had a PSA screening. Even though 47% reported having had a PSA, the number of men who had not had a PSA screening is almost equal.

Marital status for PSA, or DRE intent to screen was found not to be significant. Steel et al (2000) report that marital status may have a different type of association with knowledge about PCa screening. These researchers report that when an informational intervention was used to increase PCa knowledge there was decreasing interest in screening by married men. They do not say why/what the reason was for this finding, but one could speculate the decrease in screening interest for married men was that they did not desire knowledge about PCa or did not like the design of the information intervention. Other possibilities regarding the decrease in screening interest for married men is that the intervention information may have been frightening or the information made them uncomfortable to the point that they decided against screening with the PSA.

Insurance was not significantly associated with PSA, or DRE intent to screen. Four hundred (80%) men reported having insurance and 100 (20%) reported not having insurance. Even though men involved in this study are visitors to GU clinics, such as not having insurance coverage may limit access to care and may also be considered a barrier to care to include participation in screening. Not having insurance has been suggested as an explanation for lack of PCa knowledge, low screening rate and advanced stage at diagnosis.

In a study of screening practices in older men, Steel et al., (2000) do not use insurance coverage as a factor but do report that while controlling for all other demographic variables only income predicted having had a PSA or a DRE. Men who earned $25,000 or more per year were more likely than men who earned less than $25,000 annually to get a PSA or DRE.

PSA screening history was found not to be significant with PSA, or DRE intent to screen. Significant more men, 325 had not had a PSA screening compared to 175 that had had a PSA screening. Several studies (Romocki, et al., 2006; Ford, et al., 2006) suggest that future screening intent is positively associated with having had a recent PSA and DRE. However, these studies included a usual source of care with the HCP sharing information about the benefits/risk of screening and/or recommending screening.

This current exploratory study did not offer questions regarding a usual source of care even though more of the participants were insured when compared to those who were not insured. In other words it seems that the men were was using this free screening as a "second opinion" and could be considered as what the literature refers to as the "worried well" (Consedine et al., 2006). Characteristics of the worried well are being white, older than 50 and having a usual source of care (Consedine, et al., 2006). These characteristics were very similar to men in the free screening that reported they had had a recent PCa screening and just wanted to be sure previous information was still valid.

On the other hand, one study did report being older and having had a PSA or DRE in the past were negatively associated with intention to get screened in the future due to perceived PCa susceptibility and fatalism about PCa screening. In addition, skepticism regarding the motivations of the researchers involved in the study, test accuracy and worry about PCa diagnoses were also suggested as reasons for the negative association with intent (Papatsoris and Anagnostopoulos, 2008).

There is a significant negative association for DB and AA race. This indicates that DB scores decreased for AA's in the sample as Caucasians DB scores increased. This finding is supported by the literature. (Plowden, et al., 2000; Pendleton et al 2008) posit that AA's have less favorable behaviors and attitudes regarding PCa screening when compared to Caucasians. On second thought, it could be possible that this population of AA participants is aware of the screening controversy surrounding the risks vs. the benefits of screening and/or they may be skeptical of the PSA efficacy.

There is a significant positive association for PSA DB and having insurance coverage. This indicates that having insurance coverage has positive impact on DB to participate in PCa screening. Even though the association is significant positive ($p=0.005$) between having insurance and DB for intent to get screened with the PSA having insurance appears to give these men the security and satisfaction of knowing that health care costs are covered. While insurance type is unknown as insurance is categorized as, coverage/no coverage, men perceive they could receive health care (e.g., PCa

screening) with minimal or no out-of-pocket costs.

There is also a significant positive association for DB and PSA screening history. This supports the findings of Romocki et al., (2006) who suggest that future screening is positively associated with having had a recent PSA or DRE screening. This might also indicate that once men have made the initial decision to get a PCa screening and receive the test, the procedure is now demystified and men may decide to continue to repeat the practice of participating in health behavior, However, this is not to say that men who participate will not discontinue screening, but that once they have made this a health habit, it is more likely that they will continue to get screened with the PSA.

A significant positive association (p=0.005) found for DRE DB and having insurance coverage. This indicates that having insurance has a positive impact on DB to participate in PCa screening. The same results were found with PSA DB and having insurance coverage. While the same rationale applies here to what has already been written for PSA DB, one other rationale for the association may be that men perceive the screening as a unit; PSA and the DRE. This may also indicate that having insurance coverage has a positive impact on DB to engage in PSA screening and that having insurance coverage gives men the security of knowing that health care cost are covered

There is also a significant positive association for DRE DB and screening history. This supports the findings of Romocki et al., (2006) who suggest that future screening is positively associated with having had a recent PSA or DRE screening. This is similar to the findings of the positive association between PSA DB and screening history. Again, this could indicate that once men have knowledge about PCa screening and received the test, the procedure is now demystified and men continue with the practice of positive health behavior. In addition, this finding could indicate that men are aware of the need to get screened with both the PSA and DRE for complete PCa screening effectiveness.

This study is unique in that, to our knowledge, there has been no research that focused on factors of race, age, marital status, insurance coverage and screening history measured with DB for PCa screening intent with the PSA and DRE among Saudi men. Important findings for this study for future research and clinical practice include the need for health care providers to stay current regarding the on-going PCa screening controversy and a need for recruitment, into PCa screening studies. This research is needed to address knowledge levels, cultural attitudes and beliefs with valid and reliable cultural competence instruments to develop interventions to reduce PCa disparities.

In conclusion, this study has the potential for Saudi health care providers to take the first step toward expanding the utilization of the TTM, stages of change and DB to learn what Saudi men perceive as benefits and risks as they move/not move from precontemplation to maintenance to make getting PCa screening a yearly health habit.

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