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RACIAL/ETHNIC DIFFERENCES IN TREATMENT DISCUSSED, CHOSEN AND RECEIVED FOR PROSTATE CANCER IN A TRI-ETHNIC POPULATION

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Abstract

This study was conducted to explore whether racial/ethnic differences exist in treatment discussed, preferred and ultimately received for localized PCa as epidemiological data are scant on this issue. We recruited 640 localized PCa patients from the Texas Medical Center, Houston, TX, between 1996 and 2004. We used a structured questionnaire to collect data through personal interviews. Three main treatment modalities for localized PCa, consisting of surgery, radiation therapy and watchful waiting, were considered for this study. We found that health professionals were less likely to discuss surgery (OR=0.35, 95% CI= 0.18–0.68) and watchful waiting (OR=0.53, 95% CI= 0.34–0.83) with Hispanics than whites. Whereas, African Americans were less likely to receive watchful waiting (OR=0.22, 95% CI= 0.05–0.93). They were more likely to prefer (OR=1.23, 95% CI= 0.78–1.94) and receive (OR=1.27, 95% CI= 0.87–1.86) radiation therapy, although, they didn't achieve statistical significance ($p<.05$). Higher age was associated with lower likelihood of discussing, preferring and receiving surgical treatment. Higher Gleason sum was associated with lower likelihood of discussing treatment. A comparison of concordances between treatment preferred by patients and what was actually received, in general, showed a higher agreement for surgery and radiation therapy. Watchful waiting was discussed less often ($p<.05$) with Hispanics and surgical treatment was received less often ($p<.05$) by African-Americans. More exploration needs to be done in other settings to confirm these findings.

Keywords

Race/ethnicity; Disparities; Treatment; Prostate; Cancer

INTRODUCTION

The American Cancer Society estimated that there would be 217,730 new cases and 32,050 deaths in 2010 attributable to prostate cancer (PCa), making it the most common type of

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non-cutaneous cancer among U.S. men (Jemal, Siegel, Xu, & Ward, 2010). While death rates from prostate cancer have declined in all racial and ethnic groups in the last few years, still the mortality is differentially distributed among various racial/ethnic groups. Recent data indicates that age-adjusted (2000 US standard population) annual mortality rates are still highest for African Americans (53.6 per 100,000) compared to whites and Hispanics (23.6, 19.6 per 100000, respectively) (Jemal et al., 2010). These differences, as suggested by the Institute of Medicine, could have resulted from many factors, including, among others, system level, patient level and clinical encounter level factors (Institute of Medicine, 2002).

The question of patient preference and communication regarding various prostate cancer treatments is important considering the variety of treatment options that exist. Discussion of treatment options by physicians is crucial especially to minority and low income patients as they may not be aware of risks, benefits and side-effects of invasive prostate cancer treatments, and in particular, the complexities of selecting one treatment option over others (Cooper-Patrick, Gallo, & Gonzales, 1999; Johnson, Saha, Arbelaez, Beach, & Cooper, 2004). This is particularly true for Hispanic patients who are less likely to initiate discussion or continue their discussion with physicians about treatment if there are language barriers (Finney, Nelson, & Meissner, 2004). While many studies have reported no survival benefit of prostatectomy over radiation, especially given the high survival rate of patients with localized prostate cancer (Boorjian, Karnes, Viterbo, Rangel, Bergstralh, Horwitz, Blute, & Buyyounouski, 2011; Tsai, Chen, McLeod, Carroll, Richie, & D'Amico, 2006), with no clear consensus on appropriate PCa treatment (Bao, Fox, & Escarce, 2007; Chen, Clark, Manola, & Talcott, 2008), effective doctor-patient communication is very important in ensuring 'better quality of life' after prostate cancer treatment. Because PCa treatment can have serious side effects such as impotence, incontinence, or bowel injury, it is important that patients clearly understand the choices. Thus, physicians need to determine which treatment alternatives are most appropriate considering patient's age, associated co-morbidities and personal preference.

Although a growing body of literatures has identified racial and ethnic differences in PCa treatments, very few studies have included Hispanic patients as a separate group in their analysis (Hoffman, Harlan, & Klabunde, 2003; Schapira, McAuliffe, & Nattinger, 1995). To this end, the present study focused on racial/ethnic differences associated with treatment discussion, treatment preference (selection/choice) and treatment ultimately received for localized PCa among the three major U.S. racial and ethnic groups. This study compared the concordance between treatment preference and treatment ultimately received by race and ethnicity to get some idea about their judgment and decision.

METHODS

Data for this secondary analysis were obtained from a large University of Texas, M.D. Anderson Cancer Center (MDACC) PCa dataset collected between 1996 and 2004. The research criteria of the study participants included 1) US residency; 2) ages 40 years and above; 3) diagnosed with histologically confirmed localized primary adenocarcinoma of the prostate in the preceding year. Localized PCa was defined as a tumor not invading or extending beyond the prostatic capsule. A total of 652 PCa patients fulfilled the criteria of the original research study. However, because data on race or ethnicity was absent in 12 cases, our analysis was limited to 640 patients.

Description of the original study's data collection methodology has been published previously (Hosain, Sanderson, Du, Chan, & Strom, 2011). Briefly, PCa patients were asked to participate in this study and were informed about its aims and objectives. Those who agreed to participate were asked to sign an informed-consent form prepared according to

Institutional Review Board (IRB) guidelines. Data were obtained by using a structured questionnaire. All consenting participants completed a 45–60 minute personal interview administered by a trained MDACC research interviewer. Interviews were conducted between January 1996 and January 2004.

Information gathered for each patient included race, ethnicity, age at diagnosis, educational level, marital status, family history of PCa and co-morbid conditions such as diabetes mellitus and obesity. A respondent was considered obese if his Body Mass Index (BMI) was ≥30. Patients were considered to have a positive family history of PCa if they reported having at least one affected first-degree relative (father or brother) with the diagnosis. Other important clinical factors that influence treatment, such as Gleason sum (primary and secondary) and pre-treatment PSA level, were also recorded when available.

The treatment options discussed when the patient was first diagnosed, the treatment he preferred and the initial treatment he received within first 6 months of diagnosis were considered. These self-reported treatment options included 3 choices- watchful waiting (includes both active surveillance and watchful waiting), surgery, and radiation therapy. We excluded “Androgen Deprivation Therapy (ADT)” because few patients in our sample received it. For treatment discussion, multiple responses were allowed. For treatment preference, only one response was recorded. In the case of patients who checked multiple answers, a hierarchical method was applied to quantify treatment preference, from the most invasive therapy to the least invasive (Du, Fang, Coker, Sanderson, Aragaki, Cormier, Xing, Gor, & Chan, 2006). Invasiveness levels were characterized as being highest for surgery, followed by radiation therapy and lowest for watchful waiting. However, for initial treatment received, only one response was recorded. Concordance was calculated as the percentage of agreement between treatment patients preferred and that which they ultimately received.

DATA ANALYSIS

The study participants’ characteristics were described by using means, standard deviations, and frequency distributions. Mean differences for continuous variables such as age at diagnosis, education, and BMI (obesity) were tested by using ANOVA whereas categorical variables were tested with Pearson’s chi-square test. Crude odds ratios (ORs) and 95% confidence intervals (CIs) were calculated first to determine the association of various socio-demographic and lifestyle-related factors to various treatment modalities. Variables that were significant at $p<.2$ level were included in multivariate logistic regression models that measured adjusted odds ratio (OR) across categorized levels of socio-demographic and lifestyle-related factors with treatment discussed, preferred and ultimately received. Concordance was determined to know what percentage of PCa patients that actually received their preferred treatment. It was measured as [number of participants who preferred a particular treatment and subsequently received the same treatment/number of participants who actually preferred that particular treatment] X 100. Statistical analysis was performed using STATA software ((STATA Corp LP, College Station, TX) with $p < .05$ as the two-sided statistical significance level.

RESULTS

In total, the sample consisted of 264 whites (41.3%), 154 Hispanics (24.1%) and 222 African Americans (34.7%). African American patients were diagnosed at a significantly younger age (mean age= 59.6 years) than were white (62.1 years) and Hispanic (62.5 years) patients (see Table 1), whereas Hispanics were more likely to be married (91%) and diabetic (21%) than white and African American patients. African Americans were more likely to be

obese (35%) while whites were more likely to be diagnosed with higher (≥7) Gleason score (29%).

A smaller proportion of Hispanic and African American patients than of white patients reported discussing post-diagnostic treatment measures such as watchful waiting, surgery and radiation therapy (Table 2). The surgical option was less likely to be discussed with patients over 65 years of age (91.8% vs. 77.4%). Both Hispanic and African American patients were more likely to prefer radiation therapy than were whites (31.8%, 35.1% and 27.7%, respectively). Diabetic patients were less likely to prefer surgery (47.4% vs. 61.1%), whereas married patients favored it more (63.4% vs. 37.1%). Being Hispanic was associated with higher likelihood of receiving surgical treatment (62.3%), whereas being African American was associated with higher likelihood of receiving radiation therapy (38.3%). Lower Gleason sum was associated with increased likelihood of discussing watchful waiting (39.6%) and higher Gleason sum was associated with decreased likelihood of preferring and receiving radiotherapy (33.3% and 34.8%, respectively).

Our multivariable logistic regression models revealed that watchful waiting (OR= 0.53, 95% CI=0.34 – 0.83) and surgical treatment (OR=0.35, 95% CI=0.18 – 0.68) were significantly less likely to be discussed with Hispanic patients than with white patients (Table 3). With regard to preferring a particular treatment, no significant association was found for any race/ethnic group; though Hispanics were 29% more likely to prefer surgery (OR=1.29, 95% CI= 0.81 –2.05), whereas African Americans were 23% more likely to prefer radiation therapy (OR=1.23, 95% CI= 0.78–1.94). Regarding treatment received, African Americans were 78% less likely than whites to undergo watchful waiting (OR=0.22, 95% CI=0.05–0.93) but were 27% more likely to undergo radiation therapy (OR=1.27, 95% CI= 0.87–1.86). Separate multivariate models were run on a sub-sample of patients with pre-treatment PSA level, as this information was available for only one-third of respondents. However, no significant changes were observed when PSA level was included in the model.

Concordance rates were shown in Table 4. The observed concordance was relatively low for watchful waiting (73.3%) compared to surgery and radiation therapy (95.8% and 92.5%, respectively). Multivariate analysis showed that, for surgery, older age (OR=0.23, 95% CI= 0.16–0.33; ref: age ≤65 years), un-married status (OR=0.27, 95% CI= 0.16–0.44; ref: married) and diabetes status (OR=0.58, 95% CI= 0.36–0.96; ref: non-diabetic) were significant predictors of lower concordances. In contrast, for radiotherapy, older age (OR=3.45, 95% CI=2.36–5.07) and ‘married’ status (OR=2.39, 95% CI= 1.48–3.85) were found to be significant predictors for higher concordances. No variables appeared as significant predictors for concordances for watchful waiting.

DISCUSSION

This study observed significant racial and ethnic differences in treatment discussion and receipt but not for treatment preference. Our study revealed that health professionals were significantly less likely to discuss watchful waiting and surgical treatment with Hispanic patients than they were with white patients. Previous studies have reported that some physicians may not attempt to discuss watchful waiting with patients who they believe will not understand this surveillance concept (Demark-Wahnefried, Schildkraut, Iselin, Conlisk, Kavee, Aldrich, Lengerich, Walther, & Paulson, 1998). Therefore, this finding may be attributed to the fact that watchful waiting is a difficult concept to convey to minority patients. However, with the advent of PSA as a monitoring tool, specifically changes in PSA or PSA velocity, watchful waiting with delayed intervention is now becoming popular to avoid overtreatment with indolent disease.

This study found that surgery was significantly less often discussed with both Hispanics and African Americans. One plausible explanation could be that physicians recommend surgery less often to their non-white patients due to their a-priori assumption of fear of surgery (Shankar, Selvin, & Alberg, 2002), less adherence to medical advice (Van Ryn, & Burke, 2002) and poor outcomes (Hoffman, Harlan, Klabunde, Gilliland, Stephenson, Hunt, & Potosky, 2003) among non-white patients. A recent report by the Institute of Medicine supports the view that patient-provider communication may also be less effective when patients are non-white or poor (Institute of Medicine, 2002). From our data, however, it was not possible to measure how balanced, detailed or in-depth these discussions were. Thus, further qualitative studies are needed to evaluate whether enough time is spent with minority patients during these discussions and whether the discussions are culturally sensitive.

Apart from differences by race/ethnicity, this study also found that, in general, health professionals were less likely to discuss various treatment options with patients who were less-educated, unmarried and had cancer with higher Gleason sum. This finding implies that less detailed information concerning the trade-off between possible treatment benefit and potential complications was available to these patients. As physician-patient communication have a critical influence on patient's treatment preference (Wagner, Barrett, Barry, Barlow, & Fowler, 1995), it is imperative to improve the competency of physicians in interpersonal communications.

Previous studies have reported that patients, in general, select treatment after considering inputs from various sources including relatives, friends, co-workers, physicians and support groups (Charles, & Gafni, 1997; Hosain, Chatterjee, 1998). Prior studies on decision-making among localized PCa patients also found that more than one half of respondents considered their physician's recommendations as the most important factor in selecting a treatment (Robbins, Whittemore, & Thom, 2002; Steginga, Occhipinti, Gardiner, Yaxley, & Heathcote, 2002). Therefore, racial/ethnic differences in the level of discussion, communication or exposure to information contribute to variations in treatment preference. Our finding of a higher preference of surgery by Hispanic patients (29% more) than whites corroborates the findings of a previous study (Denberg, Beaty, Kim, & Steiner, 2005) but contradicts the findings of others (Lai, Lai, Krongrad, Lamm, Schwade, & Roos, 2000; Morris, Snipes, Schlag, & Wright, 1999). The contradictory finding may occur because some Hispanics lack the experience, ability and communication skills needed to participate actively in decision-making processes, and rely more heavily on the recommendation of a physician (generally an urologist). Thus, as a group, are more willing to accept surgery when recommended (Williams, Davis, Parker, & Weiss, 2002). The findings of higher preference of radiation therapy among African Americans (23% more) may be due to their fear of surgery and concerns about increased likelihood of impotence and erectile dysfunction inherent with prostatectomy surgery (Shankar, 2002; Johnson, Gilliland, Hoffman, Deapen, Penson, Stanford, Albertsen, & Hamilton, 2004). All these warrant the necessity of a culturally sensitive discussion process with the minorities so that each patient can weigh the options and participate in the choice about his treatment.

At the level of treatment actually received, our study showed that African Americans were less likely to receive watchful waiting than whites. These findings contrast with the observations made by other authors (Shavers, Brown, Potosky, Klabunde, Davis, Moul, & Fahey, 2004; Underwood, De Monner, Ubel, Fagerlin, Sanda, & Wei, 2004) but corroborate another study (Moul, Swsterhenn, & Connelly, 1995). The latter study asserted that the clinical diagnosis of white patients at an early stage and the presence of low Gleason sum, and the diagnosis of tumor at a later age are factors that make them better candidates for 'watchful waiting' than African Americans who tend to have aggressive and higher grade tumors at diagnosis. In our study, African Americans were more likely to receive radiation

therapy than white patients, a finding that confirms those of previous studies (Rose, Backus, Gershman, Santos, Ash, & Battaglia, 2007). This might be due to the fact that African American patients present with more co-morbidities, such as obesity and diabetes, making them bad candidates for surgery due to increased risks of post-operative complications (Morris et al., 1999). Thus, the African Americans are less often considered eligible for prostatectomy by the surgeons.

This study also allowed us to calculate the concordance between treatments preferred and received. Studies have reported that higher concordance ensures greater patient satisfaction and continuity of medical care (Street, O'Malley, Cooper, & Haidet, 2008). Though this study did not observe any racial/ethnic difference in treatment concordance for surgery and radiation therapy, the small sample size for watchful waiting subgroup have reduced our power to detect an effect. However, identification of 'predictors' such as age, marital and diabetic status indicates that health professionals paid extra attention to these patients while counseling. Our study emphasizes the need of providing more relevant information to these patients to facilitate their treatment decision-making process. This is particularly important given the observed shift of responsibility in treatment decision-making practices onto the patient [Wagner et al., 1995). However, Charles et al. (1997) have suggested that physician-patient should together negotiate a treatment to implement. The higher concordance that has been observed in this study may also be viewed as a positive trend indicating that patients' judgment and preferences were respected by their physicians.

While many studies have focused on treatment-received disparities only, to our knowledge, this study is the first investigation to compare racial/ethnic differences in treatment discussed, preferred and received in one analysis. However, our study is not without limitations. Most of the variables in this study were measured by assessing retrospective patient reporting, thus increasing the chance of recall bias. However, it has been shown that people who have undergone a sudden life-threatening health crisis manifest a very clear recall of the details surrounding the event (Brown, & Kulik, 1982). Absence of information on general health (apart from diabetes and obesity) and life expectancy of patients prevented us to incorporate them in the analyses. Another limitation of this study is that physician characteristics, which have been shown to influence treatment such as urologist vs. oncologist, rural vs. urban, white vs. Asian African etc, were not recorded (Hershman, Buono, McBride, Tsai, Joseph, Grann, & Jacobson, 2008). Finally, while pre-treatment PSA value, Gleason grade and T-stage plays a critical role in PCa treatment decision-making process, a large number of missing values of PSA score and T-stage prevented us to classify their risk using D'Amico classification.

In conclusion, the racial/ethnic variations observed in this study for "treatment discussion" underscore the need of a culturally sensitive, effective communication process. Patients who experience effective communication report higher overall levels of well-being and quality of life (Cooper-Patrick et al., 1999; Ong, Visser, Lammes, & de Haes, 2000; Stewart, Brown, Boon, Galajda, Meredith, & Sangster, 1999). However, racial/ethnic differences have consistently been reported by other U.S. studies in receiving watchful waiting, radical prostatectomy and radiation therapy in which minority patients were shown to be receiving less than optimal care (Schapira et al., 1995; Shavers et al. 2004; Shavers & Brown, 2002; Underwood et al. 2004). Thus, further study is needed to better understand the dynamics, mechanisms, and contributing factors to racial/ethnic disparities in different health care settings, such as urban vs. rural, community vs. tertiary care hospital, academic vs. non academic, general vs. cancer hospital with the goal to reduce health care disparities.

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Table 1

Baseline characteristics of the sample population (N=640)

Variables	Whites (N=264) n (%)	Hispanics (N=154) n (%)	African Americans (N=222) n (%)	Group difference
Age at diagnosis				
≤65 years	166 (62.9)	98 (63.6)	164 (73.9)	
> 65 years	98 (37.1)	56 (36.4)	58 (26.1)	
Mean ± SD	62.1 ± 8.0	62.5 ± 8.0	59.6 ± 8.3	W, H > AA †
Education				
≤12 years	50 (18.9)	73 (47.4)	96 (43.2)	
> 12 years	214 (81.1)	81 (52.6)	126 (56.8)	W > H, AA *
Body Mass Index				
Not Obese	203 (76.9)	104 (67.5)	144 (64.9)	
Obese	61 (23.1)	50 (32.5)	78 (35.1)	H, AA > W *
Marital status				
Not married	32 (12.1)	14 (9.1)	59 (26.6)	
Married	232 (87.9)	140 (90.9)	163 (73.4)	W, H > AA *
Family History				
Negative	203 (76.9)	131 (85.1)	175 (78.8)	
Positive	61 (23.1)	23 (14.9)	47 (21.2)	W > H *
Diabetes				
No	244 (92.2)	122 (79.2)	177 (79.7)	
Yes	20 (7.6)	32 (20.8)	45 (20.3)	H, AA > W *
Gleason Sum				
< 7	183 (71.2)	131 (86.2)	158 (76.3)	
≥7	74 (28.8)	21 (13.8)	49 (23.7)	W, AA > H *

*significant at p<.05;

†significant at p<0.017 (.05/3) with Bonferroni correction;

W=White, H=Hispanic, AA=African American total did not add up 100% for some variables due to missing values

Table 2

Treatments discussed, preferred and received by sample characteristics (N=640)

Variables	Treatments discussed			Treatment preferred			Treatment received		
	WW	Surgery	RT	WW	Surgery	RT	WW	Surgery	RT
Race (%)									
Whites	43.9	93.2	87.9	3.8	60.2	27.7	4.6	60.2	31.4
Hispanics	27.9	79.9	81.2	2.0	63.0	31.8	2.0	62.3	33.1
African Americans	32.9	84.7	83.8	1.0	55.0	35.1	0.9	56.3	38.3
Age at diagnosis (%)									
≤65 years	37.4	91.8	83.4	2.3	70.1	22.0	1.9	70.3	25.5
> 65 years	34.0	77.4	87.7	2.4	36.8	50.0	4.3	37.3	51.9
Education (%)									
≤12 years	26.5	78.1	78.5	1.4	51.6	42.0	1.8	54.3	40.2
> 12 years	41.3	91.7	88.1	2.9	63.0	25.7	3.1	62.0	31.1
Body Mass Index (%)									
Not obese	37.5	87.4	84.9	2.7	58.8	31.3	3.3	59.2	33.7
Obese	33.3	86.2	84.7	1.6	59.8	31.2	1.1	59.8	35.5
Marital status (%)									
Not married	21.9	75.2	84.8	1.9	37.1	49.5	4.8	33.3	53.3
Married	39.1	89.4	84.9	2.4	63.4	27.7	2.2	64.5	30.5
Family History (%)									
Negative	35.4	86.4	84.5	2.0	57.8	32.8	2.6	58.2	35.6
Positive	39.7	89.3	86.3	3.8	64.1	25.2	3.1	64.1	29.0
Diabetic (%)									
No	37.0	88.6	84.5	2.4	61.1	29.5	2.8	61.1	32.4
Yes	32.0	78.4	86.6	2.1	47.4	41.2	2.1	49.5	44.3
Gleason Sum (%)									
< 7	39.6	88.1	86.4	3.0	59.5	33.3	3.2	59.8	34.8
≥7	28.5	82.6	80.6	0.7	56.9	24.3	1.4	58.3	31.3

WW=watchful waiting, RT=radiation therapy

Treatment discussed added up >100% as multiple answers were allowed

Treatment preferred and received added up <100% as some patients preferred or received 'others' treatment modalities.

Table 3

Association between treatment discussion, preferred and received by sample characteristics (N=640)

Variables	Treatments Discussed			Treatment Preferred			Treatment Received		
	WW	Surgery	RT	WW	Surgery	RT	WW	Surgery	RT
	O.R. [95% CI]	O.R. [95% CI]	O.R. [95% CI]	O.R. [95% CI]	O.R. [95% CI]	O.R. [95% CI]	O.R. [95% CI]	O.R. [95% CI]	O.R. [95% CI]
Race									
Whites	ref	ref	ref	ref	ref	ref	ref	ref	ref
Hispanics	0.53	0.35	0.68	0.51	1.29	0.99	0.36	1.08	1.02
	[0.34–0.83]†	**[0.18–0.68]**†	[0.38–1.21]	[0.13–1.98]	[0.81–2.05]	[0.61–1.66]	[0.10–1.32]	[0.68–1.73]	[0.64–1.64]
African Americans	0.76	**0.51**	0.98	0.26	0.87	1.23	0.22	0.90	1.27
	[0.51–1.13]	**[0.26–0.99]***	[0.56–1.70]	[0.05–1.22]	[0.57–1.36]	[0.78–1.94]	**[0.05–0.93]***	[0.59–1.39]	[0.87–1.86]
Age at diagnosis									
≤65 years	--	ref	ref	--	ref	ref	ref	ref	ref
> 65 years	--	0.31	1.53	--	0.23	3.58	2.08	0.23	3.24
	--	**[0.19–0.53]**‡	[0.92–2.54]	--	**[0.16–0.34]**‡	**[2.44–5.24]**‡	[0.78–5.54]	**[0.16–0.33]**‡	**[2.24–4.70]**‡
Education									
≤12 years	ref	ref	ref	ref	ref	ref	--	ref	ref
> 12 years	1.66	2.14	2.08	1.52	1.37	0.58	--	1.18	0.79
	[1.13–2.43]†	**[1.45–4.11]**†	**[1.29–3.36]**†	(0.40–5.80)	[0.93–2.01]	**[0.39–0.85]**†	--	[0.80–1.74]	[0.54–1.16]
Marital status									
Not married	ref	ref	--	--	ref	ref	--	ref	ref
Married	2.31	2.79	--	--	2.85	0.43	--	3.83	0.41
	(1.38–3.86)†	**[1.53–5.08]**†	--	--	**[1.76–4.61]**‡	**[0.26–0.69]**‡	--	**[2.34–6.25]**‡	**[0.26–0.65]**‡
Family History									
Negative	--	--	--	ref	ref	ref	--	--	ref
Positive	--	--	--	1.63	1.17	0.74	--	--	0.81
	--	--	--	[0.54–4.98]	[0.75–1.81]	[0.46–1.19]	--	--	[0.52–1.28]
Diabetes									
No	--	ref	--	--	ref	ref	--	ref	ref

Variables	Treatments Discussed			Treatment Preferred			Treatment Received		
	WW	**Surgery**	**RT**	**WW**	**Surgery**	**RT**	**WW**	**Surgery**	**RT**
	O.R. [95% CI]	**O.R. [95% CI]**	**O.R. [95% CI]**	**O.R. [95% CI]**	**O.R. [95% CI]**	**O.R. [95% CI]**	**O.R. [95% CI]**	**O.R. [95% CI]**	**O.R. [95% CI]**
Yes	--	0.59	--	--	0.55	1.59	--	0.64	1.54
	--	[0.32–1.07]	--	--	**[0.34–0.90]***	[0.97–2.60]	--	[0.39–1.04]	[0.95–2.49]
Gleason Sum									
< 7	ref	ref	ref	ref	ref	ref	ref	ref	ref
≥7	0.51	0.40	0.59	0.22	0.80	0.69	0.38	0.83	0.93
	[0.34–0.78]†	**[0.23–0.72]†**	**[0.36–0.98]***	[0.03–1.68]	[0.52–1.21]	[0.44–1.10]	[0.08–1.71]	[0.54–1.25]	[0.60–1.42]

WW=watchful waiting, RT=radiation therapy. Different models were used for each treatment option. OR= Odds ratio, CI= Confidence Interval.

*p<.05;

†p<.01;

‡p<.001

Table 4

Concordance between treatment received and treatment preferred by sample characteristics

	WW concordance	Surgery concordance	RT Concordance
Overall	11/15 (73.3)	362/378 (95.8)	185/200 (92.5)
Race/ethnicity			
White	7/10 (70.0)	152/159 (95.6)	69/73 (94.5)
Hispanic	2/3 (66.7)	93/97 (95.9)	43/49 (87.8)
African Americans	2/2 (100)	117/122 (95.9)	73/78 (93.6)
Age at Diagnosis			
≤65 years	7/10 (70.0)	289/300 (96.3)	85/94 (98.8)
> 65 years	4/5 (80.0)	73/78 (93.6)	100/106 (94.3)
Education			
≤12 years	3/3 (100)	110/113 (97.3)	81/92 (88.1) *
> 12 years	8/12 (72.7)	252/265 (95.1)	104/108 (95.2)
Obesity			
Non Obese	10/12 (83.3)	256/265 (96.6)	134/141 (95.1) *
Obese	1/3 (33.3)	106/113 (93.8)	51/59 (86.4)
Marital status			
Not married	2/2 (100)	32/39 (82.1) †	47/52 (90.4)
Married	9/13 (69.2)	330/339 (97.3)	138/148 (93.2)
Family history of PCa			
Negative	8/10 (61.5)	282/294 (95.3)	153/167 (84.5)
Positive	3/5 (75.0)	80/84 (95.2)	32/33 (84.2)
Diabetes			
Negative	9/13 (60.0)	318/332 (95.8)	147/160 (83.5)
Positive	2/2 (100)	44/46 (91.7)	38/40 (88.4)
Gleason Sum			
≤6	9/10 (90.0)	83/86 (96.5)	118/127 (92.9)
≥7	2/5 (40.0)	279/292 (95.5)	67/73 (91.8)

* $p<0.05$,

† $p=<.001$