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Patient-Health Care Provider Communication among Patients with Newly Diagnosed Prostate Cancer: Findings from A Population-based Survey

Lixin Song^{1,2}, Jeannette T. Bensen^{2,3}, Catherine Zimmer⁴, Betsy Sleath⁵, Bonny Blackard², Elizabeth Fontham⁷, L. Joseph Su⁸, Christine S. Brennan⁷, James L. Mohler⁹, and Merle Mishel¹

¹School of Nursing, University of North Carolina, Chapel Hill, USA

²Lineberger Comprehensive Cancer Center, University of North Carolina, Chapel Hill, USA

³School of Public Health, University of North Carolina, Chapel Hill, USA

⁴Odum Institute for Research in Social Science, University of North Carolina, Chapel Hill, USA

⁵Eshelman School of Pharmacy, University of North Carolina, Chapel Hill, USA

⁶School of Public Health, University of North Carolina, Chapel Hill, USA

⁷Louisiana State University Health Sciences Center, School of Public Health, New Orleans, USA

⁸National Cancer Institute, Division of Cancer Control and Population Sciences, Bethesda, USA

⁹Department of Urology, Roswell Park Cancer Institute, Buffalo, USA

Abstract

Objective—To examine the multidimensional concept of patient-health care provider (HCP) communication, its effects on patient satisfaction with oncology care services, and related racial differences.

Methods—The current analysis draws from a population-based survey sample of 1011 African American and 1034 Caucasian American men with newly diagnosed prostate cancer. The variables of satisfaction with health care services, interpersonal treatment, contextual knowledge of the patient, and prostate cancer communication were analyzed using multiple-group structural equation modeling.

Results—Regardless of race, patient-HCP communication was related positively to interpersonal treatment by the HCP, HCP's contextual knowledge of the patient, and prostate cancer

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Correspondence author (Lixin Song, PhD) at University of North Carolina-Chapel Hill, Carrington Hall, Chapel Hill, NC 27599. USA. Tel: 919-966-3612. Fax: 919-843-9900. lsong@unc.edu.

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communication. More positive patient-HCP communication was related to more satisfaction with health care services. Racial differences were significant in the relationships between patient- HCP communication and prostate cancer communication.

Conclusion—Content and interpersonal relationships are important aspects of patient-HCP communication and affect patient satisfaction with oncologic care for prostate cancer. Practice Implications: HCPs need to integrate the transfer of information with emotional support and interpersonal connection when they communicate with men with newly diagnosed prostate cancer.

Keywords

prostate cancer; patient-health care provider communication; satisfaction with health care services; structural equation modeling

1. INTRODUCTION

Cancer care, especially immediately after the diagnosis, involves many health care providers (HCPs) from different disciplines and an overwhelming amount of information about multiple treatment modalities. HCPs have been identified as the major source for cancer information [1], especially among older adults [2]. Yet doctors have been reported to be the least satisfying source of information [2]. Among patients with prostate cancer, African Americans are less satisfied with the healthcare services they receive compared to their Caucasian American counterparts [3]. However, little empirical evidence exists to explain these disparities.

Patient-HCP communication, an essential component of quality care [4, 5], has been identified as an important factor influencing patient satisfaction with health care services [6, 7]. Patient-HCP communication might help explain racial disparities that exist in patient satisfaction with cancer care. The primary function of patient-HCP communication is to exchange information. HCPs must offer a plan for diagnosis and treatment, while building trustworthy patient-HCP relationships. These relationships can help patients navigate challenging situations like bad news and uncertainty about a variety of similar treatment options [8]. The National Cancer Institute has outlined the multidimensional nature of patient-HCP communication, that is, patient-HCP communication involves the content of dialogue as well as the nonverbal behaviors and the affective component (i.e., what happens emotionally to the HCP and the patient during the encounter) [5].

Current methods of assessing interpersonal processes, however, are inadequate for examining patient-HCP communication and its effects and outcomes. Most of this line of research has focused on communication behaviors and information seeking/giving processes or patterns [9–11]. How these different conceptual dimensions of patient-HCP communication, especially the affective component, work collectively to affect health outcomes in oncology care is poorly understood. Even less is known about the role of race in these different elements of patient-HCP communication and the racial differences in the relationship between communication and health outcomes. In addition, most existing research has used convenience samples or selected populations (e.g., urban academic, university-affiliated, and VA hospitals) [11–13], small sample sizes [3, 14], non-cancer

patients [14–16], or mainly female cancer patients [13, 17, 18]. There is a lack of systematic evidence on the effects of patient-HCP communication on cancer care outcomes, such as patient satisfaction with cancer care services, in a representative sample of male cancer patients, in general, and prostate cancer patients, specifically.

To address the gaps in the literature and expand communication research in the context of oncology care, this study used a population-based survey sample of African American and Caucasian American men with newly diagnosed prostate cancer to examine patient-HCP communication, its effects on patient satisfaction with health care services, and related racial differences. Patient-HCP communication is multidimensional and includes, at least, the concepts of interpersonal treatment, contextual knowledge about the patient, and communication about prostate cancer and its treatment (prostate cancer communication). The conceptualization of interpersonal treatment taps into the patient's perception of the level of friendliness, caring, and respect received from the HCPs during the medical encounter, and whether the communication is informative, supportive, partnership-building, and positive [16], all of which have been linked to more patient satisfaction [19]. Similarly, contextual knowledge of the patient refers to the patient's evaluation of the degree to which HCPs have knowledge of the patients' general life [19]. If the HCP shows interest in the patient's personal life, family, and living situation, the level of contextual knowledge improves and the disease-centeredness of the interaction is lessened, which adds a positive evaluation to the patient-HCP relationship [20]. Prostate cancer communication refers to the instructions and advice about prostate cancer symptoms, treatment, decision-making about care, and treatment-related side-effects [21].

The central hypotheses of the performed research were two-fold. First, patient-HCP communication was positively associated with the three measures (i.e., interpersonal treatment, contextual knowledge, and prostate cancer communication) among African American and Caucasian American men with newly diagnosed prostate cancer. Second, more positive patient-HCP communication was associated with more patient satisfaction with health care services. The associations between the three measures and patient-HCP communication and between patient satisfaction and patient-HCP communication were tested for racial differences between African American and Caucasian American men. The findings of this study will deepen our understanding of patients' communication experience with HCPs during the early phase of prostate cancer survivorship [22].

2. METHODS

2.1 Sample

After approval by the respective Institutional Review Boards for human subject research, a population-based sample of 1011 African- and 1034 Caucasian American patients were recruited from October 2004 to August 2009 into the parent study, the North Carolina–Louisiana Prostate Cancer Project (PCaP). PCaP explored racial differences in prostate cancer aggressiveness through a comprehensive evaluation of individual, social, and tumor level factors. Men aged 40–79 years with newly diagnosed prostate cancer (within the last 12 months from the time of recruitment) from North Carolina or Louisiana completed the study interview in English. The treating physicians first screened the potentially eligible

patients prior to recruitment. If the physician believed that a patient was not physically or mentally able to participate in the study he/she would notify the research team and the patient would not be approached. The study nurses then contacted the patient and reviewed his eligibility before and during the survey. The eligibility criteria for the research participants included that they: did not live in an institution (nursing home); were cognitively intact or not in a severely debilitated physical state; were not under the influence of alcohol, severely medicated, or apparently psychotic at the time of the interview; and self-identified as African American/Black or Caucasian American/White. Detailed information about the recruitment and research procedures has been published previously [23].

After obtaining informed consent, study nurses surveyed the research subjects using structured questionnaires during in-person home visits. The study participants were aged 63 on average. The majority was married (76%), reported a family income of \$30,001 and above (64%), and had low to intermediately aggressive prostate cancer (82%). About half (49%) had a college or higher level of education.

2.2 Measures

The patient outcome variable, satisfaction with health care services, was measured using a 15-item, 5-point Likert-type scale developed by the researchers based on a literature review. This scale evaluates patients' satisfaction with the waiting time, amount of time spent with the providers, and amount of information and reading materials received. Higher scores indicate more satisfaction.

The predictor variables included patient-HCP communication and potential covariates (socio-demographic and cancer-related factors). Patient-HCP communication, a latent variable, was measured using three indicators: interpersonal treatment (5-items), contextual knowledge of the patient (4-items), and prostate cancer communication of the person treating the respondent's newly diagnosed prostate cancer (5-items). These three indicators were measured using adapted subscales from the Primary Care Assessment Survey[©] 1995 Safran/The Health Institute [21]. Higher scores indicate more positive communication.

This study also included two sets of covariates that may potentially influence patient satisfaction with health care services [18]. First, sociodemographic factors included age; education (high school vs. college); race (African American vs. Caucasian American); family income (\$30K vs. \$30,001-\$70K vs. \$70k); and marital status (married vs. not married). This information was collected using the Demographic Data Form. Second, the cancer-related factor referred to cancer aggressiveness, which was derived based on clinical grade, clinical stage, and PSA at diagnosis and categorized into three levels: high aggressiveness (i.e., Gleason score ≥ 8 or PSA >20 ng/ml, or Gleason score = 7 with stage cT3–cT4); low aggressiveness (i.e., Gleason score < 7 and stage cT1–cT2, and PSA <10 ng/ml); or intermediate aggressiveness (all other cases) [23].

2.4 Data Analysis

Sociodemographic factors, cancer aggressiveness, the outcome variable (satisfaction with health care services), and the three indicators of patient-HCP communication were described using proportions for categorical/dichotomous variables, as well as means and standard

deviations for continuous variables. Multiple-group structural equation modeling (SEM) was conducted with MPlus 6.0 [24] using maximum likelihood estimation [25] to test the hypotheses. The goodness-of-fit of each model was evaluated using the recommendations from Hu and Bentler (e.g., CFI .95, RMSEA <.06) [26].

Multi-group SEM analyses were conducted in three steps to model the data from African American and Caucasian American simultaneously. First, the confirmatory factor analysis was conducted for patient-HCP communication. All parameters were initially held unequal. To examine racial differences in the associations between the three indicators and patient-HCP communication, constraints were then applied by setting the measurement model parameters equal between African Americans and Caucasian Americans when testing the factor loadings, the intercepts, and the error terms. As suggested by Muthen and Muthen [24], the testing for racial equality in the intercepts and the error terms would stop if the factor loadings were found to be significantly different.

Second, a path model was constructed to provide estimation of the relationships between satisfaction with health care services and with patient-HCP communication, while holding the structural parameters between the exogenous and endogenous variables unequal across groups (less restrictive model). To test racial differences in the relationships between the outcome variable and patient-HCP communication, the nested models that differed in the number of cross-group equality constraints were tested. The less restrictive model was compared with the restrictive model (i.e., the model in which the parameters were set to be equal across groups). The difference between the χ^2 s for the two models provided a basis for determining the adequacy of the equality constraints, with a significant difference indicating nonequivalence. Finally, to account for the effects of covariates on the outcome variable, sociodemographic factors (age, education, family income, and marital status) and cancer aggressiveness were added to the path models.

3. RESULTS

3.1 Sample Characteristics

Table 1 shows the results of sample characteristics. African Americans were younger than Caucasian Americans ($p < .0001$). Compared with Caucasian American men, higher percentages of African Americans had a high school or lower level of education, were not married, had an annual income lower than \$70K, and had prostate cancer with intermediate or high aggressiveness (all $ps < .001$).

Table 2 displays the reliability of the measurement tools and the descriptive analysis results of the communication variables and patients' satisfaction. All measures had satisfactory psychometric properties with Cronbach's alphas at 0.84 or above for both African and Caucasian Americans. The reliability of the latent variable, patient-HCP communication, was .96 and .95 for African and Caucasian American men, respectively. African Americans had significantly lower mean scores of interpersonal treatment ($p < .05$), prostate cancer communication ($p < .001$), and satisfaction with health care services ($p < .01$) but higher mean scores of contextual knowledge ($p < .05$) than Caucasian Americans.

3.2 Confirmatory Factor Analysis

The results of CFA analysis indicated an excellent goodness-of-fit ($\chi^2=0.523$, $df=2$, $p=.7701$; $RMSEA<.001$, 90% $CI=.000 - .041$; $CFI/TLI=1.00/1.002$) (Figure 1). Patient-HCP communication explained about 80%, 42%, and 73% of the variances of the three indicators (i.e., interpersonal treatment, contextual knowledge, and prostate cancer communication) for Caucasian Americans, respectively and 80%, 41%, and 61% of variances of the three indicators for African Americans, respectively. Factor loadings for patient-HCP communication ranged from 2.058–2.766 for African Americans and Caucasian Americans, which indicated adequate assessment of the latent variable and positive association between these indicators and patient- HCP communication. Regarding racial differences, the factor loadings of prostate cancer communication for patient-HCP communication were different between the two groups; Caucasians had stronger effects than African Americans. The non-significant differences by race between the factor loadings of interpersonal treatment and contextual knowledge for patient-HCP communication suggested that the associations between these factors and patient- HCP communication were similar between the two races. The racial difference testing stopped with no testing for group equality in the intercepts and error terms when significant group inequality was found in the factor loadings.

3.3 Multi-group SEM Analysis

The goodness-of-fit was very good ($\chi^2=13.040$, $df=6$, $p=.0424$; $RMSEA=0.034$, 90% $CI=.006 - .060$; $CFI/TLI=.997/.995$) in the less restrictive path model that included satisfaction with health care services and patient-HCP communication (Figure not shown). The model goodness-of-fit remained satisfactory ($\chi^2=14.676$, $df=7$, $p=.0404$; $RMSEA=0.033$, 90% $CI=.007 - .057$; $CFI/TLI=.997/.995$) after setting the slopes equal between patient-HCP communication and satisfaction with health care services (Figure 2). The significant relationship between satisfaction and patient-HCP communication remained whereas the change in Chisquares was non-significant ($\chi^2=1.636$, $df=1$, $p=.201$). These results indicated that, regardless of racial background, more positive patient-HCP communication was related to more satisfaction with health care services. About 19% and 17% of the variances of satisfaction with health care services were explained by patient-HCP communication in African American and Caucasian American participants, respectively.

The covariates were added to the restricted path model (Figure 3) to examine the relationships between patient-HCP communication and satisfaction with health care services while controlling for the sociodemographic factors and cancer aggressiveness. The model goodness-of-fit remained very good ($\chi^2=95.071$, $df=37$, $p<.0001$; $RMSEA=0.043$, 90% $CI=.033 - .054$; $CFI/TLI=.976/.967$). The positive association between better patient-HCP communication and more patient satisfaction remained significant. The effects of income ($p<.001$), education ($P<.01$) and marital status ($P<.05$) were significant only among African American men, which indicated that African Americans' satisfaction with health care services was positively related to higher income, more education, and not being married. Patient-HCP communication and these covariates explained about 20% of the variances of satisfaction with health care services for both African Americans and Caucasian Americans.

4. DISCUSSION AND CONCLUSION

4.1 Discussion

Patient-HCP communication and its relationship with patient satisfaction were analyzed among men with newly diagnosed prostate cancer using the population-based PCaP survey data and SEM techniques. The key results supported the hypotheses: (1) patient-HCP communication was related positively to patient-reported interpersonal treatment by the HCP, HCP's contextual knowledge of the patient, and the prostate cancer communication; (2) more positive patient-HCP communication was related to more satisfaction with health care services. Regarding the racial differences, African American men and their Caucasian American counterparts differed significantly only in the relationships between the prostate cancer communication and patient-HCP communication. These findings remained significant after controlling for sociodemographic factors and cancer aggressiveness that may influence patient satisfaction [18]. Using population-based data, this study generated findings that can help our understanding of men's communication with HCPs for cancer care. This research also fills a gap in the literature about racial differences between African American and Caucasian American men under stress (e.g., being newly diagnosed with prostate cancer) in patient-HCP communication and its relationship with patient satisfaction with health care services.

The findings from this study have evidenced that patients with newly diagnosed prostate cancer value the medical-technical information as well as the interpersonal relationship when communicating with the HCPs treating their prostate cancer. Unlike previous research that has used an individual measurement of communication, we examined patient-HCP communication as a latent variable that was measured using three indicators to capture the multidimensional characteristics of patient-HCP encounters in oncologic care. Empirical research, most of which has been conducted among patients with chronic illnesses, has shown how important different communication components (such as the medical-technical information, affective, and relational communication) are to patients and their HCPs [8, 27–30]. However, the research findings have been inconsistent. For example, a meta-analysis by Hall and Dornan [31] indicated that one of the lowest patient satisfaction ratings concerned doctors' information-giving behaviors; patients who received more information were more satisfied than patients who received less information. Yet other researchers found patterns of doctors' affective behaviors to be the most important factor in determining patient satisfaction [17]. This study examined the patient-HCP communication issue in a new population (patients with newly diagnosed prostate cancer), using a new approach (SEM), and from a new angle (patient-HCP communication is associated positively with the collective effects of three indicators). The main goal of these patients' visits for oncology care is to develop treatment plans and to make a treatment decision. Thus, the information referring to prostate cancer and its treatment is of paramount importance.

Meanwhile, the affective and relational aspects of communication (e.g., interpersonal treatment and contextual knowledge) also are salient to these patients because they usually endure pronounced cancer-related psychological distress (e.g., higher levels of uncertainty, anxiety, fear, and vulnerability) [32–36]. Furthermore, these patients have newly built

relationships with the HCPs in oncological care. HCPs' expression of caring and commitment, thus, is especially important in capturing the patients' trust that their HCPs have considered their well-being first and are committed to their best interests and ongoing care. The results from this study suggest that HCPs need to verbally and nonverbally express their care for the patients; attend to the patient's overall well-being as a whole person; and make efforts to build rapport while providing sufficient medical-technical information about cancer diagnosis, treatment, and related issues.

The results of this population-based study also confirm that patients' communication with the HCPs treating their prostate cancer is associated positively with their satisfaction with health care services. Patients' satisfaction ratings reflect the extent to which patients' health care needs, expectations, or preferences are met [37]. Patients' more satisfaction has been associated with patient-HCP communication featured by HCPs' demonstrated interest in patients, friendliness and caring, provision of informative messages, and opportunity for patients to express their concerns [8, 17]. Patients with newly diagnosed prostate cancer are often challenged by the distress of cancer, as well as the decision-making task of weighing the tradeoffs between harms and benefits of several similar treatments [38]. Patients' satisfaction with health care services can be impacted greatly by their perception of whether they receive accurate and sufficient information regarding their cancer and the treatment for it and whether their relationships with HCPs are supportive and trustworthy [8]. While the patient-HCP alliance is essential in helping them make informed treatment decisions and make adjustments to the new reality of their cancer [9, 39], the quality of patient-HCP communication can impact significantly the relationship between the patient and his HCPs and the outcome of this relationship (e.g., patient satisfaction with health care services) [8, 40]. Thus, HCPs need to not only share cancer-related information but also to build positive, caring relationships with the patient in order to improve oncology care outcomes.

Of special interest are the findings related to racial differences in patient-HCP communication and the effect of communication on patient satisfaction in this population-based study. African Americans and Caucasian Americans in this study had similar factor loadings of patient-HCP communication on the contextual knowledge and interpersonal treatment and similar slope coefficients for the relationships between patient-HCP communication and patient satisfaction with health care services. These African American and Caucasian American men only differed in the associations between patient-HCP communication and the prostate cancer communication. These findings are somewhat different from findings of previous research of patients in primary care settings, in which African American patients were more likely to experience problems in communicating with HCPs [41] and were treated more contentiously by HCPs [16, 42]. A possible explanation of these seemingly counter-intuitive results may be that all patients with newly diagnosed prostate cancer, regardless of their racial and ethnic backgrounds, need to build new relationships with the HCPs in cancer care while managing the overwhelming demands of information, treatment decision-making [33], treatment-related sideeffects, psychological distress, and financial burdens [32, 43, 44]. While focusing primarily on working with their HCPs on cancer diagnosis and treatment, men of different racial groups may experience different levels of difficulties in communication and in their encounters with HCPs. However, the variability in the relationships between the communication factors and

between communication and satisfaction is very small between African American and Caucasian American men.

This study was limited in several ways, most stemming from the choice of using secondary analysis of the cross-sectional population-based survey data. First, the use of a cross-sectional observational design did not allow the examination of causal effects. Future studies need to consider a longitudinal design or randomized clinical trial to address this issue. Second, this study focused on exploring the self-reported perspectives of patients with newly diagnosed prostate cancer. Patients' opinions convey a perspective concerning human aspects of care such as communication that objective sources of evaluation (e.g., analysis of audiotaped encounters) cannot provide. However, patients may rate their communication with HCPs positively regardless of its quality because of social desirability bias. Future research needs to document the communication issues from the perspectives and preferences of both patients and HCPs and to integrate self-reported survey data with recorded data (e.g., audio or video) so as to mitigate the potential biases. Finally, this study examined only one patient outcome—satisfaction with health care services. Future research needs to broaden focus and explore the effects of patient-HCP communication on other relevant patient outcomes (e.g., understanding and recall of information, psychological distress), as well as HCPs' health outcomes (e.g., HCP's job satisfaction, stress and burnout).

4.2 Conclusion

This study highlighted the importance of patient-HCP communication in oncologic care for patients with newly diagnosed prostate cancer. The results generally confirmed the hypotheses that patient-HCP communication is a multidimensional concept and patient-HCP communication is positively associated with patient satisfaction with health care services.

4.3 Clinical Implications

Patient-HCP communication in oncology care settings should integrate the transfer of cancer-related information with emotional support and interpersonal connection. Furthermore, the results also suggest that there are similarities rather than differences between African American and Caucasian American men in their communication with HCPs treating their prostate cancer and in how their patient-HCP communication affects their satisfaction with the cancer care they receive. Thus, HCPs need to pay attention to the communication needs of all patients with newly diagnosed prostate cancer.

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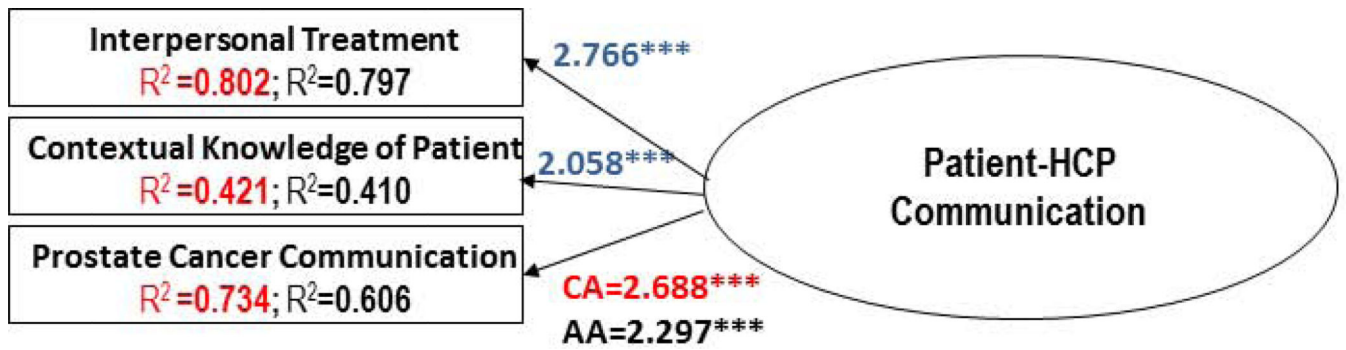


Figure 1.
 Confirmatory Factor Analysis of Patient-HCP Communication
 Chi-sq=.523, df=2, p=.7701; RMSEA=0.000, 90% CI=.000 – .041; CFI/TLI=1.000/1.002
 Note: Numbers in red – for Caucasian Americans (CA);
 Numbers in black – for African Americans (AA)
 Numbers in blue – equal across groups

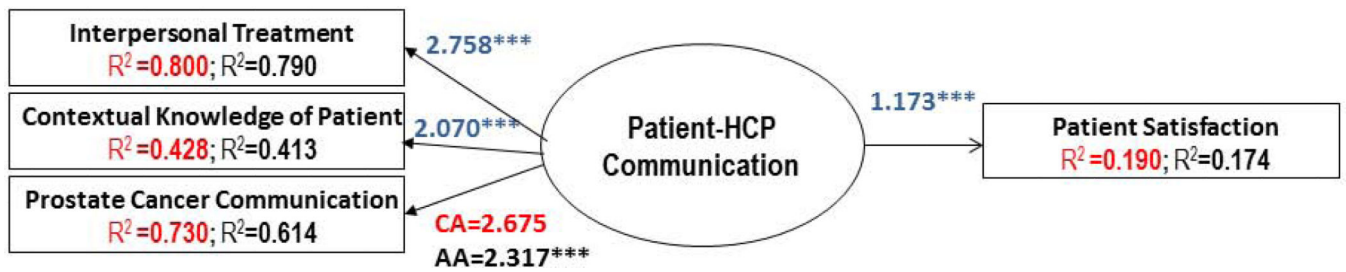


Figure 2.
Patient-HCP Communication and Patient Satisfaction with Health Care Services (restrictive model)

Chi-sq=14.676, df=7, p=.0404; RMSEA=0.033, 90% CI=.007 – .057; CFI/TLI=.997/995

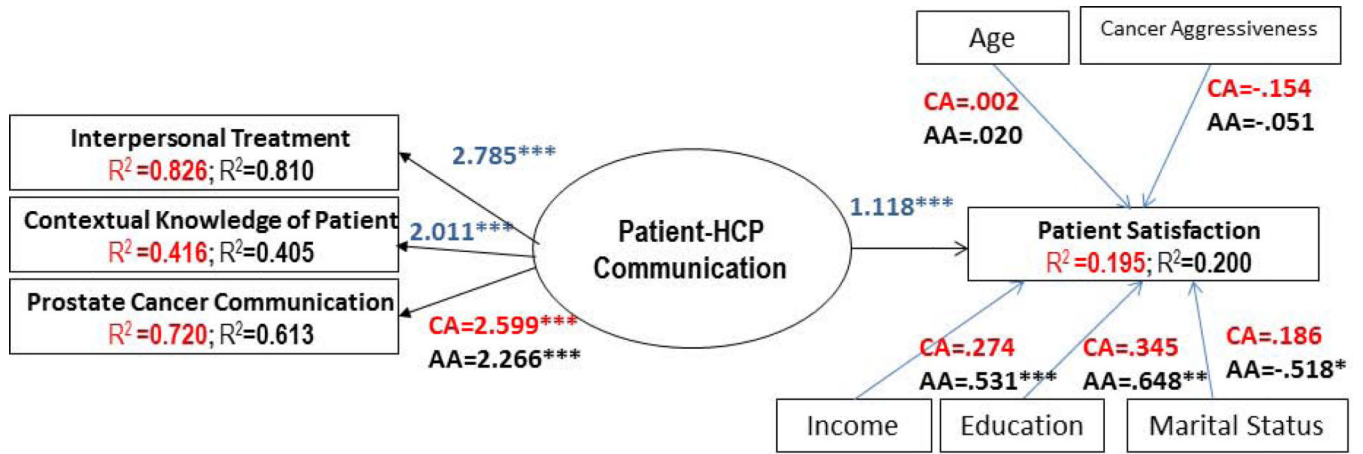


Figure 3.
 Patient-HCP Communication and Patient Satisfaction with Health Care Services
 (Controlling for the effects of covariates)
 Chi-sq=95.071, df=37, p<.0001; RMSEA=0.043, 90% CI=.033 – .054; CFI/TLI=.976/.967
 *: p<.05; **: p<.01; ***: p<.001

Table 1

Characteristics of Research Participants

Categorical Variables	Overall			Caucasian Americans (N=1034)			African Americans (N=1011)			Chi-sq (df)
	N	%	N	N	%	N	N	%		
Marital Status	2043									
Married	1544	75.58	866	83.75	678	67.20	75.84 (df=1)			
Not married	499	24.42	168	16.25	331	32.80				
Family Income	1738									
\$30K	628	36.13	193	22.16	435	50.17	203.45(df=1)			
\$30,001–\$70K	663	38.15	344	39.49	319	36.79				
\$70,001	447	25.72	334	38.35	113	13.03				
Education	2042									
High School	1042	51.03	388	37.52	654	64.88	152.86 (df=1)			
Some College	1000	48.97	646	62.48	354	35.12				
Aggressiveness	1984									
Low	1009	50.86	567	56.14	442	45.38	24.43 (df=2)			
Intermediate	616	31.05	289	28.61	327	33.57				
High	359	18.09	154	15.25	205	21.05				
Continuous Variable	N	Mean	SD	N	Mean	SD	N	Mean	SD	t
Age	2045	63.00	8.00	64.00	8.00	8.00	62.00	8.00	8.00	39.96

Table 2
Descriptive Analysis Results of Communication Variables and Patient Satisfaction

Continuous Variables	N	Overall			Caucasian Americans			African Americans		
		Mean	SD	α	Mean	SD	Cronbach's α	Mean	SD	Cronbach's α
Contextual Knowledge	2016	15.16	3.20	.84	15.01	3.19	.86	15.32	3.20	4.66
Interpersonal Treatment	2024	21.91	3.10	.92	22.07	3.08	.93	21.73	3.10	5.99
Content of Communication	2023	22.45	3.06	.91	22.71	2.94	.93	22.19	3.15	14.68
Satisfaction	2024	20.77	2.76	.90	20.95	2.78	.91	20.58	2.72	8.90