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PSYCHOSOCIAL PREDICTORS OF BOTHER DUE TO LOWER URINARY TRACT SYMPTOMS IN AFRICAN-AMERICAN MEN: THE FLINT MEN'S HEALTH STUDY

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Abstract

Purpose—Despite the importance of lower urinary tract symptom (LUTS) related bother to health-related quality of life and treatment utilization, little is known about factors contributing to perceived bother. We examined associations between several psychosocial measures and LUTS-related bother in a population based sample of African-American men.

Materials and Methods—In 1996, 361 African-American men from Genesee County, Michigan, aged 40 to 79 years, without a history of prostate cancer/surgery provided information on LUTS bother and several psychosocial factors; perceived stress, social support, stressful life events, and self-rated physical and emotional health. Associations between these factors and perceived bother were examined, controlling for age and LUTS severity.

Results—Overall, 39.3% of men reported having moderate/severe LUTS-related bother. Men with poor emotional health and low social support were 2.25 (95%CI=1.05, 4.85) and 2.89 (95%CI=1.14, 7.35) times more likely to report moderate/severe bother, respectively. No other psychosocial factors significantly impacted bother after adjustment for age and LUTS severity.

Conclusions—In this population based study of African-American men we found that poor emotional health and low social support were significantly associated with moderate/severe LUTS-related bother after adjustment for age and LUTS severity, supporting the notion that measures of urinary bother may capture both somatic and psychological distress. These findings suggest that treating LUTS alone may not completely ameliorate urinary bother if the underlying emotional health and social support problems are not addressed. Further studies in racially-diverse populations are warranted.

Keywords

African-American; Risk Factors; LUTS Bother

INTRODUCTION

Benign prostatic hyperplasia (BPH), the most common benign neoplasm in American men^{1,2} is a chronic, progressive condition associated with the development of lower urinary tract symptoms (LUTS). While LUTS rarely progress to become life-threatening, they frequently have a negative impact on men's quality of life. It has been demonstrated that the effect of moderate LUTS on health-related quality of life (HRQOL) was comparable to that of having diabetes, high blood pressure or cancer, while the effect of severe LUTS was comparable to having had a heart attack or stroke.³ Given that 35 to 50% of men with BPH develop moderate/severe LUTS,⁴ this represents a large number of men with significantly diminished quality of life.

The degree to which patients find LUTS bothersome and disruptive to their daily lives provides the basis for the decision to seek treatment⁵ and is most often the factor that brings men to medical attention. Despite the importance of bother on HRQOL and treatment utilization, little is known about specific factors that contribute to perceived bother. It has been suggested that patients experience of bother may be a "combination of symptom severity, psychological distress, negative evaluations of the condition and beliefs about the reactions of others."⁵

Limited available data suggest that race/ethnicity may be associated with differences in urinary bother. A recent study suggests that African-American men are less bothered by LUTS than white or Hispanic men.⁶ These findings coincide with a previously published report where we found that although African-American men reported significantly greater LUTS severity compared to their Caucasian counterparts, they reported significantly less bother. This disparity persisted even after adjustment for relevant socio-demographic variables such as age, marital status, education and income⁴. If indeed perceived bother due to LUTS drives health-seeking behavior for these symptoms, our findings suggest that African-American men may be less likely to seek and receive medical treatment for LUTS. In this study, we sought to examine the impact of various psychosocial characteristics on bother due to LUTS using data from the Flint Men's Health Study (FMHS), a community-based study of African-American men ages 40–79.

MATERIALS AND METHODS

Subjects

Briefly, in 1996, a probability sample of 943 African-American men aged 40–79 from Genesee County, Michigan, were invited to participate in a study of BPH and prostate cancer.⁷ In order to validate census-defined race/ethnicity status, men were asked to additionally self-identify race/ethnicity as one of the following: white, African-American or black, Hispanic or Latino, American Indian, Asian or other.⁸ Of the 817 self-identified African-American eligible men who agreed to participate (87%), 87 were excluded due to a prior history of prostate cancer or surgery. The remaining 730 subjects completed a detailed in-home epidemiologic interview on risk factors for prostate disease. At the conclusion of the interview, 379 subjects underwent a comprehensive urological examination, which included a serum prostate-specific antigen (PSA) measurement, uroflowmetry, digital rectal

examination (DRE), and transrectal ultrasound (TRUS). Participants also completed self-administered questionnaires regarding LUTS experience. Men with an abnormal DRE and/or elevated total PSA concentration (≥ 4.0 ng/mL) were referred for prostate biopsy. Ten men were diagnosed with biopsy-confirmed prostate cancer and subsequently excluded from the study. Of the 369 men free of prostate cancer, 361 provided complete information on LUTS bother for the current study. The study was approved by the University of Michigan Institutional Review Board.

Measurements

Lower Urinary Tract Symptoms—Lower urinary tract symptom severity and perceived bother were gathered using the American Urological Association Symptom Index (AUASI) and Symptom Problem Index (SPI). The AUASI is a self-administered questionnaire including elements about severity of urinary symptoms attributed to BPH.⁹ Seven questions elicited information about the frequency of specific urinary symptoms during the past month. Symptom frequency questions were measured on a 6-point scale from 0 (never) to 5 (always) and summed for total AUASI score. LUTS severity was categorized as *mild/none* (AUASI ≤ 7) and *moderate/severe* (AUASI > 8). The reliability and validity of these questions have been reported elsewhere.¹⁰ The SPI consists of seven questions and seeks to determine how much of a problem the urinary symptoms assessed by the AUASI are and is measured on a 5 point scale from 0 (no problem) to 4 (big problem).¹¹ Moderate/severe bother was defined as a total SPI score of > 3 .

Global Stress—Participants completed the 4-item version of the Perceived Stress Scale (PSS), a validated questionnaire designed to measure the degree to which respondents find their lives stressful.¹² The scale contains the following questions: “*In the last 30 days, about how often did you feel...* 1) “*unable to control the important things in your life?*” 2) “*that difficulties were piling up so high that you could not overcome them?*” 3) “*confident about your ability to handle personal problems?*” and 4) “*that things were going your way?*” Responses were measured on a 5-point scale varying from 0 to 4 and negatively worded items were reverse-scored prior to analysis. Individual scores were then summed to yield the level of global perceived stress which ranged from 0–16 and Individual questions were also dichotomized as ≥ 3 (high stress) vs. < 3 (low stress) based on prior literature utilizing these scales.¹³

Social Support—Supportive and negative social interactions with family and friends were assessed using four questions. Supportive interactions were assessed by the questions: “*How much do your family members make you feel loved and cared for?*” and “*How much do your friends make you feel loved and cared for?*” Negative interactions were assessed by the questions: “*How much do you feel your family members make too many demands on you?*” and to “*How much do you feel your friends make too many demands on you?*”¹³ Responses were measured on a 5-point scaled from 0 to 4 and negatively worded items were reverse-scored prior to analysis. Individual questions were dichotomized as ≥ 3 (low support) vs. < 3 (high support) based on prior literature utilizing these scales.¹³

Stressful Life Events—Stressful life events were assessed by querying participants about the occurrence of seven of the most stressful life events identified in the literature¹⁴ including: (1) serious illness or injury that started or got worse, (2) being the victim of serious injury or assault, (3) retirement, (4) being laid off from work, (5) major financial difficulty, (6) death of someone close, and (7) divorce or separation.

Overall Physical and Emotional Health—Overall physical health was assessed with the question: “*Would you say your health is excellent, very good, good, fair or poor?*” and measured on 5-point scale varying from 1 (excellent) to 5 (poor). Similarly, overall emotional health was assessed by asking the same overall health question with the following additional language: “*What about your emotional health—how good you feel or how stressed, anxious or depressed you feel?*” Emotional health was also measured on a 5-point scale varying from 1 (excellent) to 5 (poor).¹⁵ Both physical and emotional health scores were dichotomized as ≥ 4 (fair/poor) vs. <4 (good/very good/excellent) based on prior literature utilizing these scales.¹³

Statistical Analysis

Distributions of sociodemographic and psychosocial characteristics were examined overall and by bother status and were tested using Pearson’s chi-square tests for association, Cochran-Armitage tests for trend. Psychosocial characteristics were categorized based on the distribution in our population (quartiles, tertiles) and standardized cutoffs based on prior literature utilizing these scales.¹³ To examine associations between psychosocial characteristics and urinary bother, logistic regression models were built to calculate odds ratios and 95% confidence intervals after adjustment for LUTS severity and age. Further adjustment for co-morbidities including history, duration or treatment of diabetes, high blood pressure, prostatitis, asthma and all-cause cancer did not alter findings, therefore, results on models only adjusting for age and LUTS severity are presented. Two-tailed tests were used for all comparisons and $p < 0.05$ was considered statistically significant. All analyses were done using SAS Version 9.1 (Cary, NC).

RESULTS

Overall, 142 (39.3%) of the 361 men reported having moderate/severe bother due to LUTS. A significant trend of increasing bother with increasing age was found in this cohort, with more than 50% of men over the age of 60 reporting moderate/severe bother ($p < 0.01$). The proportion of men reporting moderate/severe bother did not differ significantly by income, education, marital status, employment status, or health insurance status. Men who reported a physician-diagnosed history of diabetes, high blood pressure and arthritis were significantly more likely to report moderate/severe bother compared to men without a history of these co-morbidities. (TABLE 1)

Associations between various psychosocial characteristics and bother are presented in Table 2. Overall, men in the highest quartile of perceived stress and social support, reflecting high stress and low social support, were more likely to experience moderate/severe urinary bother after adjustment for age. Men who experienced greater than two stressful life events in the previous year were approximately two times more likely to have moderate/severe bother

after adjustment for age. Furthermore, men with the poorest ratings of both physical and mental health were more than twice as likely to experience moderate/severe bother after adjustment for age. However, after further adjustment for LUTS severity, only low social support and poor ratings of emotional health were found to significantly predict moderate/severe urinary bother. When individual sources of social support were examined, we observed that men whose friends make too many demands were 3.73 times more likely to report moderate/severe bother. This finding remained statistically significant after adjustment for age and LUTS severity (95%CI=1.48, 9.39). No effects were observed with demands from family.

When overall perceived stress scores were dichotomized as low vs. high stress, men defined as having high perceived stress were found to be 1.56 (95%CI=1.01, 2.40) times more likely to report moderate/severe bother compared to men with low perceived stress. However, after adjustment for age and LUTS severity, this relationship was no longer statistically significant. Individual perceived stress items were not found to be significantly associated with increased bother after adjustment for age and LUTS severity. (TABLE 2) Along the same lines, neither specific individual stressful life events nor the overall number of events was found to appreciably alter report of bother due to LUTS in this cohort.

DISCUSSION

In this study, we examined the potential associations between several psychosocial variables and bother due to LUTS using data from the Flint Men's Health Study (FMHS), a community-based study of African-American men aged 40–79. We found that after adjustment for age and LUTS severity, men who reported poor emotional health and low social support were significantly more likely to endorse moderate/severe bother as compared to those with better overall emotional health and social support.

Our findings which demonstrated that poor emotional health differentiated the men reporting moderate/severe bother from those reporting mild bother is consistent with the growing body of work suggesting that LUTS are, in fact, associated with subsequent depressive symptoms.¹⁶ A recent study by Fleishman and Zuvekas¹⁷ concluded that global self-rated mental health reflects, in part, psychological distress and depressed mood. It is possible that, for some men, reports of worse emotional health are in fact related to underlying depressive symptoms resulting from increased symptom severity. Interestingly, we observed an association between poor overall emotional health and increased bother after controlling for LUTS severity indicating a psychological component independent of symptom experience. These findings perhaps indicate the co-existence of separate psychiatric conditions such as depression or anxiety in these men which coincides with findings of previous studies which suggest that African-Americans are more reluctant to seek help for emotional issues.^{18,19}

We observed that men reporting low social support were more likely to report moderate/severe bother. In addition, when examining specific sources of positive and negative social interactions, we observed that while positive and negative social interactions men had with family did not impact their bother, men who felt their friends were making too many demands were almost four times more likely to report moderate/severe bother. Much of the

work addressing social supports that African Americans use to cope with physical illness comes from the help-seeking and cancer literature. These studies report that African American men relied on the “*presence of others*” who “*were there for them and available for whatever was needed*”¹⁹ and often sought informal help through social exchanges.²⁰ It is possible that men in this study who reported low social support and specifically that their friends were making too many demands felt less able to turn to others for help negatively influencing coping mechanisms for dealing with significant lower urinary tract symptoms.

Our findings suggest that poor emotional health and low social support have a significant effect on urinary bother independent of age and LUTS severity. However, in order to understand the absolute impact that emotional health and social support actually have on LUTS-related bother, we calculated the population attributable risk percent (PAR%)²¹ to assess the proportion of moderate/severe bother that could be prevented in the total population if we improved emotional health and social support in these individuals. These estimates suggest that 30% and 35% of moderate/severe cases of urinary bother in the total population would be prevented if we eliminated poor emotional health and low social support, respectively. While age and LUTS severity are known significant predictors of urinary bother, these attributable risk estimates demonstrate the potential impact these psychosocial variables have on urinary bother.

In this report, neither global perceived stress nor the number of stressful life events men experienced was related to level of urinary bother. These findings coincide with prior reports which demonstrate LUTS-specific distress to primarily impact severity of bother.^{5,22} General stress and the everyday stressors men face such as the loss of a job or financial problems appear to operate independently of their perception of LUTS-related bother. Finally, several studies have suggested that increased severity of LUTS is associated with a lower level of self-rated physical health.²³ While, we initially observed an association between poor overall physical health and moderate/severe bother, this relationship was no longer statistically significant after adjustment for age and LUTS severity.

While this study is one of the few to comprehensively investigate the effects of psychological factors on bother due to LUTS in African-American men, several limitations must be considered. First, the cross-sectional nature of the study limits our ability to make causal inferences. Specifically, it is not possible for us to determine whether the measures of psychosocial behavior preceded the occurrence of perceived bother. Second, there is a possibility for selection bias as a result of the response rate to the clinical portion of the FMHS (n=369). However, when we examined the 369 men who participated in the clinical portion of the FMHS to those that did not, we did not observe any significant differences in baseline demographic characteristics (age, education, income) or in lower urinary tract symptom severity or associated bother (AUASI and SPI scores).²⁴ These data suggest that older men or men experiencing more significant urological problems were not more likely to participate in the clinical portion of the FMHS, minimizing the potential for selection bias on estimates of LUTS bother scores. Third, we are limited in our use of single-item measures of self-rated mental and physical health which preclude us from examining both the depth and breadth of emotional and physical well-being and which may have limited reliability.¹⁷ Furthermore, the FMHS protocol excluded all men who were previously

diagnosed with prostate cancer and/or who had undergone prostate surgery. As current clinical practice suggests men with increased bother due to symptoms are more likely to receive surgical treatment, it is possible the magnitude of bother due to LUTS may have been underestimated in this cohort. Finally, while adjusting for several comorbid conditions did not alter our findings, we were limited in our lack of mental health comorbidity data. Therefore, we can not rule out the potential confounding effects mental health conditions, such as depression, can have on our reported associations. Despite these limitations, the results in this population-based study of bother due to LUTS in African-American men provide insight into the potential impact of psychosocial characteristics on perceived bother.

CONCLUSIONS

In conclusion, in this population-based sample of African-American men, we observed that poor self-reported emotional health and low social support to be significantly associated with moderate/severe bother from LUTS after adjustment for age and LUTS severity. These findings support the notion that measures of urinary bother capture both somatic and psychological distress and suggest that treating LUTS alone may not completely ameliorate urinary bother if the underlying emotional health and social support problems are not addressed.

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TABLE 1

Sociodemographic and Selected Health Characteristics by Bother Status

	Moderate/ Severe Bother (n= 142)	Mild/ No Bother (n=219)	p-value *
Age (years)			<0.01/<0.01
40–49	26 (18.3)	81 (37.0)	
50–59	44 (31.0)	71 (32.4)	
60–69	47 (33.1)	42 (19.2)	
70–79	25 (17.6)	25 (11.4)	
Annual income			0.21/0.04
<\$15,000	30 (30.0)	30 (18.3)	
\$15,000–\$29,999	25 (25.0)	43 (26.2)	
\$30,000–\$49,999	18 (18.0)	30 (18.3)	
\$50,000–\$73,999	14 (14.0)	34 (20.7)	
>=\$74,000	13 (13.0)	27 (16.5)	
Education			0.12
Less than high school	84 (59.2)	147 (67.1)	
High school or greater	58 (40.8)	72 (32.9)	
Marital status			0.54/0.30
Married/living with partner	78 (55.3)	134 (61.2)	
Divorced/separated/widowed	51 (36.2)	69 (31.5)	
Never Married	12 (8.5)	16 (7.3)	
Unemployed last 12 months			0.42
No	132 (93.0)	208 (95.0)	
Yes	10 (7.0)	11(5.0)	
Health Insurance			0.19
No	13 (9.1)	12 (5.5)	
Yes	129 (90.9)	205 (95.0)	
Diabetes **			0.02
No	109 (76.8)	189 (86.3)	
Yes	33 (23.2)	30 (13.7)	
High blood pressure **			
No	54 (38.0)	107 (48.9)	0.04
Yes	88 (62.0)	112 (51.1)	
Arthritis **			
No	69 (51.4)	136 (62.1)	0.01
Yes	73 (48.6)	83 (37.9)	
LUTS Severity			<0.01
Mild/none	34 (76.1)	180 (82.2)	
Moderate/Severe	108 (23.9)	39 (17.8)	

Note: Totals may not equal 361 due to missing data

* Based on Pearson chi-square test for differences / Cochran-Armitage chi-square test for trend

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Based on self-report physician-diagnosed history

Table 2

Psychosocial Characteristics by Lower Urinary Tract Symptom Bother

	Moderate/Severe Bother (n=142) N (%)	Mild/No Bother (n=219) N (%)	Unadjusted OR (95% CI)	Age adjusted OR (95% CI)	Age & LUTS adjusted OR (95% CI)
Perceived stress score¹					
<1	20(14.2)	47(21.5)	--	--	--
1-3	33(23.4)	59(26.9)	1.31(0.67, 2.58)	1.51(0.76, 3.04)	0.90(0.36, 2.26)
3-6	38(27.0)	55(25.1)	1.62(0.83, 3.16)	2.33(1.15, 4.73)	1.47(0.58, 3.72)
>6	50(26.4)	58(26.5)	2.02(1.06, 3.86)	3.12(1.56, 6.27)	1.63(0.63, 4.19)
Social support score¹					
<2	20(14.3)	50(22.8)	--	--	--
2-4	35(25.0)	56(25.6)	1.56(0.80, 3.05)	1.64(0.83, 3.26)	2.36(0.94, 5.90)
4-6	37(26.4)	55(25.1)	1.68(0.87, 3.27)	2.17(1.08, 4.34)	2.16(0.82, 5.66)
>6	48(34.3)	58(26.5)	2.07(1.09, 3.94)	2.89(1.46, 5.72)	2.89(1.14, 7.35)
Stressful life events²					
0	39(27.5)	80(36.5)	--	--	--
1	75(34.3)	75(34.3)	1.50(0.89, 2.52)	1.51(0.89, 2.57)	1.60(0.77, 3.32)
2+	64(29.2)	64(29.2)	1.54(0.90, 2.62)	1.81(1.04, 3.15)	1.46(0.68, 3.12)
Overall physical health²					
1-2	27(19.0)	63(28.8)	--	--	--
3	49(34.5)	83(37.9)	1.38(0.78, 2.44)	1.28(0.71, 2.29)	1.27(0.56, 2.90)
4-5	66(46.5)	73(33.3)	2.11(1.20, 3.69)	2.00(1.13, 3.53)	1.28(0.56, 2.93)
Overall emotional health²					
1-2	31(12.8)	86(39.3)	--	--	--
3	48(33.8)	71(32.4)	1.88(1.08, 3.25)	1.99(1.13, 3.50)	1.99(0.93, 4.25)
4-5	63(44.3)	62(28.3)	2.82(1.64, 4.84)	3.20(1.82, 5.58)	2.25(1.05, 4.85)
Perceived Stress Severity Overall³					
Low stress (<3)	53(37.6)	106(48.4)	--	--	--
High Stress (≥ 3)	88(62.4)	113(51.6)	1.56(1.01, 2.40)	1.11(0.62, 2.0)	1.64(0.87, 3.12)
Perceived Stress Individual Items					

	Moderate/Severe Bother (n=142) N (%)	Mild/No Bother (n=219) N (%)	Unadjusted OR (95% CI)	Age adjusted OR (95% CI)	Age & LUTS adjusted OR (95% CI)
[n(%) High Stress] (3)					
Unable to control important things ³	27(19.2)	33(15.1)	1.34(0.76, 2.34)	1.32(0.59, 2.93)	1.44(0.63, 3.30)
Difficulties piling up ³	24(17.0)	34(15.5)	1.11(0.63, 1.97)	0.78(0.34, 1.77)	1.02(0.43, 2.41)
Confident about handling things	7(4.9)	14(6.4)	0.77(0.30, 1.95)	0.50(0.12, 2.00)	0.54(0.13, 2.23)
Things going your way	11(7.8)	14(6.4)	1.24(0.56, 2.81)	0.73(0.24, 2.22)	0.76(0.23, 2.39)
Social Support Individual Items					
[n(%) Low Support] (3)					
Family makes you feel loved ⁴	7(5.04)	10(4.57)	1.11(0.41, 2.98)	0.29(0.05, 1.55)	0.29(0.05, 1.54)
Friends make you feel loved ⁴	23(16.6)	24(11.1)	1.59(0.86, 2.94)	1.02(0.42, 2.49)	1.22(0.47, 3.14)
Family makes too many demands	34(24.5)	46(21.0)	1.22(0.74, 2.02)	1.01(0.50, 2.06)	1.08(0.51, 2.27)
Friends make too many demands	22(15.7)	18(8.3)	2.06(1.06, 4.00)	3.15(1.28, 7.75)	3.73(1.48, 9.39)
Stressful Life Events [n(%) Yes]					
Serious illness or injury	35 (24.7)	37 (16.9)	1.61(0.96, 2.71)	1.00(0.48, 2.07)	0.77(0.35, 1.69)
Victim of assault	6 (4.2)	7 (3.2)	1.33(0.44, 4.04)	0.36(0.07, 1.74)	0.38(0.08, 1.89)
Unwanted retirement	9 (6.3)	8 (3.7)	1.79(0.67, 4.74)	1.93(0.52, 7.19)	2.23(0.57, 8.76)
Laid off > 3 months	9(6.3)	10 (4.6)	1.42(0.56, 3.57)	1.46(1.32, 1.53)	2.23(0.68, 7.34)
Serious financial problems	45 (31.7)	58 (26.1)	1.28(0.80, 2.04)	1.44(0.76, 2.74)	1.76(0.90, 3.45)
Death of close individual	60 (42.3)	96 (43.8)	0.93(0.52, 1.67)	0.93(0.52, 1.67)	0.93(0.51, 1.69)
Separated or Divorced	8 (5.6)	16 (7.3)	0.76(0.32, 1.82)	0.90(0.28, 2.94)	0.97(0.28, 3.35)
Physical Health [n(%) Fair/Poor]	66(46.5)	73(33.3)	1.74(1.13, 2.68)	1.11(0.61, 2.01)	1.09(0.60, 2.00)
Emotional Health [n(%) Fair/Poor]	63(28.3)	62(28.3)	2.02(1.30, 3.14)	1.40(0.76, 2.59)	1.54(0.82, 2.89)

Note: Totals may not equal 361 due to missing data

¹ Quartile cut-offs were used for perceived stress and support score

² Tertile cut-offs were used for stressful life events, and emotional and physical health ratings

³ Negatively worded questions reverse coded (higher scores indicate higher perceived stress; % high stress represents those whose response was 3 "fairly often or often");

⁴ Negatively worded questions reverse coded (higher scores indicate lower social support; % low stress represents those whose response was 3 "fairly often or often")