



# An Examination of the Relationship between Mental Distress, Functional and Psychosocial Quality of Life Indicators in a Population Based Sample of Prostate Cancer Survivors Who Received Curative Treatment

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## Abstract

**Introduction:** Although survival rates are highest among prostate cancer survivors compared to any other forms of cancer, nearly 60% suffer from mental distress. Here we examine urinary function and psychosocial stressors and their association with poor mental health in a younger group of prostate cancer survivors who have undergone curative treatment.

**Methods:** The study includes 128 men (47 to 70 years old) who received active treatment for prostate cancer, and completed a survivorship online survey between 2017 and 2018. Psychological distress was assessed with Kessler Psychological Distress Scale. International Prostate Symptom Score subscales (incomplete urinary emptying, frequency, intermittency, urgency, weak stream, straining and nocturia) and number of current prostate cancer survivorship stressors were predictors. Multivariate logistic regression was used to fit the model while controlling for months of survivorship since diagnosis, the presence or absence of surgery, radiation or hormone therapy treatment, current medication for depression and demographics.

**Results:** A total of 19.5% of men scored positive for current mental health issues. Prostate cancer survivors who reported increased number of current survivorship stressors (OR 1.48, 95% CI 1.09–2.01), had higher frequency of urination (OR 2.05, 95% CI 1.15–3.64), history of radiation treatment (OR 7.15, 95% CI 1.02–50.35) and were currently on prescribed medication for depression (OR 33.47, 95% CI 3.80–294.87) had higher odds for screening positive for psychological distress compared with their counterparts.

## Abbreviations and Acronyms

PCa = prostate cancer  
I-PSS = International Prostate Symptom Score

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The data used in this research were made available by the Soillse Prostate Cancer Quality of Life Research Lab, funded by the Dalhousie Medical Research Foundation (DMRF).

Data access: Data and biological samples from this survey are available to researchers through a NSHA data access process.

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**Conclusions:** These results corroborate recent findings showing an intersection between urological oncology and poor mental health during survivorship, and warrant the development of multidisciplinary teams in addressing survivorship issues in this population.

*Key Words:* prostate cancer survivorship, active treatment, mental health, urinary symptoms, psychosocial factors

Incidence of prostate cancer is very high with 1 in 7 men being diagnosed in their lifetime.<sup>1</sup> Survival rates for PCa are among the highest compared to other forms of cancer with a 5-year relative survival rate of 99.9% and a 15-year relative survival rate of 91.4% for localized disease.<sup>2</sup> Despite these high survival rates nearly 60% of patients with PCa suffer from mental health distress.<sup>3</sup> Patients with PCa are also at an increased risk of suicide when compared to the general population and are still found to be at an increased risk more than 15 years after diagnosis.<sup>3,4</sup> Other malignancies do have similar and sometimes higher rates of psychological distress<sup>5</sup> but none of these malignancies affect such a large number of patients for such a long period of time.

High rates of mental distress considerably affect a patient's immediate wellbeing. Prolonged chronic stress has also been shown to negatively influence the underlying cellular and molecular processes that facilitate the progression of cancer.<sup>6</sup> Moreover, there is clear evidence that mental health distress, which is often undiagnosed in patients with PCa and survivors, is associated with poor adherence to medical therapies<sup>7</sup> and a risk factor for worse oncologic outcomes.<sup>8</sup> These statistics only begin to demonstrate the heightened risk of overall health deterioration for survivors who simultaneously suffer from common psychological disorders. Although we know that this patient population is at a higher risk for psychological distress<sup>9</sup> there is limited evidence evaluating what factors are driving these elevated rates. There are some intuitive factors that are likely related to the rates of distress such as sexual and voiding function, but they have not been studied. Beyond intuitive factors affecting distress, there are likely variables that only patients are truly able to articulate. By using a questionnaire designed to identify patient/survivor concerns as well as a validated questionnaire to assess urinary function, we report an analysis of the relationship between survivorship concerns, treatment modality and voiding function to psychological distress in a voluntary sample of prostate cancer survivors from Eastern Canada who took an online quality of life survey assessing functional and psychological well-being.

## Materials

The study's analytic sample was based on a cross sectional subsample of 135 adult males (ages 47 to 70) from the Canadian Maritimes who received active treatment for their

prostate cancer diagnosis and who were surveyed between May 2017 and December 2018 by completing an online questionnaire (average completion time was 18 minutes) assessing quality of life issues. Participants were recruited through printed materials that were advertised in the urology and radiation oncology clinics throughout the Maritimes. Participants were also recruited through community PCa support groups. The survey data was collected using Research Electronic Data Capture (REDCap), an online web application provided at Nova Scotia Health Authority designed to support data capture for research studies.<sup>10</sup> Any male with a history of localized prostate cancer diagnosis, of any age, race, relationship status, ethnicity or socioeconomic status who spoke English, resided at the time in the Maritimes and had an email address was eligible to participate in the study. The response rate to the survey was 68%. All participants signed an electronic informed consent that was approved by the research ethics boards of their region. Participants accessed the survey through their own electronic device (personal computer, tablet/iPad®, smart phone) or electronic devices available at the clinic sites in the waiting room areas.

## Measures

Mental health was the main outcome and was assessed using the Kessler Psychological Distress scale (K10), a 10-item scale that screens for symptoms of psychological distress such as depression and anxiety within the past month.<sup>11,12</sup> The items were measured using a 5-point Likert scale ranging from 1 (none of the time) to 5 (all of the time). scores on K10 range from 10 to 50 with scores under 20 indicating good mental health, 20–24 indicating mild, 25–29 indicating moderate and 30 and above indicating severe mental disorder.<sup>12</sup> A categorical variable was created and used in all analyses, where 0 was coded to indicate a score below 20 and 1 indicated a score of 20 or above.

Urinary function was assessed using the I-PSS questionnaire (also called the American Urological Association Symptom Index) based on the answers to 6 questions assessing urinary symptoms (incomplete emptying, frequency, intermittency, urgency, weak stream, straining, nocturia). Responses for each of the questions included 0 (not at all), 1 (less than 1 in 5 times), 2 (less than half the time) 3 (about half the time), 4 (more than half the time) and 5 (almost always).

### **Prostate Cancer Related Current Survivorship Stressors.**

Survey respondents were asked to indicate from a list what if any current survivorship stressors/concerns they had at the time of taking the survey that were related to their PCa diagnosis, treatment and/or survivorship including work or school, finances, getting to and from appointments, accommodations, medical coverage, feeling a burden to others, worry about friends/family, feeling alone, relationship difficulties, fears/worries, sadness, frustration/anger, changes in appearance, intimacy/sexuality, meaning/purpose of life, faith, understanding of illness and/or treatment, talking with the health care team, making treatment decisions, knowing about available resources, concentration/memory, sleep, weight and swallowing. Survey respondents were encouraged to click all current concerns and needs that applied. This variable was coded as a count variable with higher numbers indicating a higher number of current survivorship needs/concerns.

**Treatment Modality.** Survey respondents were asked if they received radical prostatectomy, radiation (external beam or brachytherapy) or hormonal therapy (injections, pills or orchiectomy) for their prostate cancer diagnosis. A variable was created for each response and was coded 1 for yes or 0 for no.

### *Covariates*

Education (assessed completed high school or less, completed bachelor degree or less, or completed Masters, PhD or MD), relationship status (coded 1 for married, living with partner or dating or 0 for widowed, divorced, separated, never married), past year household income (coded 1 for less than \$50K, 2 for \$50K to less than \$70K, 3 for \$70K to \$100K, 4 for more than \$100K), current province of residence (Nova Scotia, New Brunswick or Prince Edward Island), survivorship time (months elapsed between diagnosis to survey) and current intake of any prescribed medication for depression, anxiety or both (no was coded 0, yes was coded 1).

### *Statistical Analysis*

All analyses were performed with SPSS V25. A multivariate logistic regression analysis was used to assess the relationship between scoring positive for psychological distress and our predictors (treatment modality, urinary problems and number of current survivorship needs/concerns) in controlled (age; education; relationship status; past year household income; province of residence; comorbidities; current status of intake of prescribed medication for anxiety, depression or both and survivorship time) and uncontrolled analyses. Cross tab analyses were used first to assess the association between

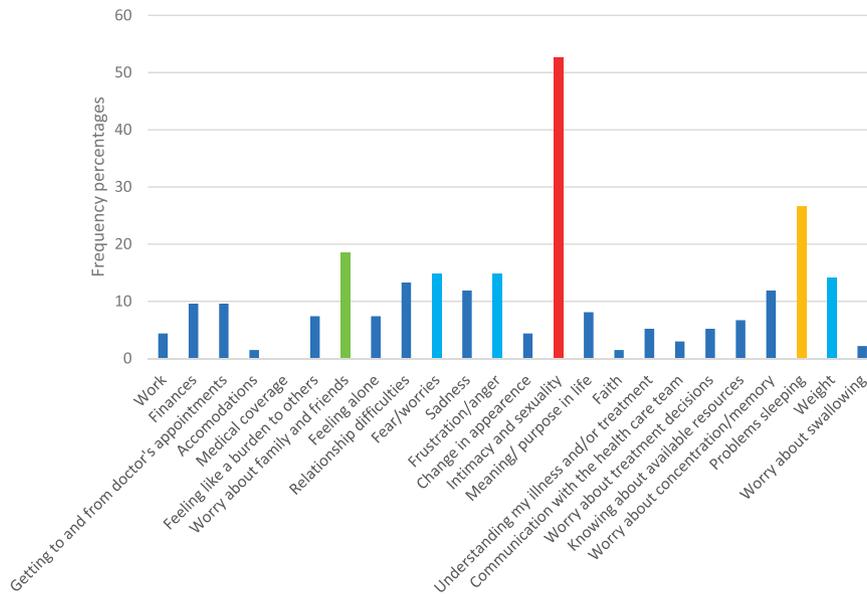
screening positive for psychological distress and the presence or absence of PCa or other forms of cancer. Before conducting the main analysis, the assumptions of logistic regression were checked and found tenable. Missing data above 5% were identified for the mental health outcome variable (5.1% missing). A missing variables analysis revealed that Little's MCAR test was not statistically significant ( $p=0.22$ ) indicating that data was missing at random. After listwise deletion the analytical sample for the multivariate logistic regression was 128.

### **Results**

In this sample of PCa survivors 19.5% scored positive for current psychological distress. The mean age of men in this sample was 63.70 (SD=4.57). Most men in this sample were educated, having completed a bachelor degree or more (85.2%); were married, dating or living with a partner (94.1%) and had a household income in the past year of over \$70K (52.8%). The supplementary table (<https://www.urologypracticejournal.com>) describes characteristics of the sample by level of psychological distress.

Younger age, having more than 1 comorbidity; increased number of survivorship concerns; urgency in urination and being currently on medication for depression, anxiety or both were all independently associated with screening positive for psychological distress. The figure displays the survivorship needs identified by men in this sample. More than half the sample (52.6%) identified intimacy and sexuality as their main current stressor, followed by problems sleeping (26.7%), worrying about family and friends (18.5%), fear/worries (14.8%), frustration/anger (14.8%), weight (14.1%), relationship difficulties (13.3%) and sadness (11.9%).

The fitted logistic model was statistically significant  $X^2(19)=50.09$ ,  $p < 0.001$ , with a Nagelkerke's  $R^2=0.54$ , and Hosmer and Lemeshow test showing model stability ( $p > 0.05$ ). This model was accurate for nearly 90% of the individuals in this sample. The table reports Wald chi-square statistics for each of the predictors in the model, their estimates and odds ratios. When all other variables were held constant odds ratios were 1.48 times higher (95% CI 1.09–2.01) and 2.05 times higher (95% CI 1.15–3.64) to screen positive for psychological distress among survivors who had increased PCa survivorship stressors or increased urinary frequency compared to those who had fewer stressors or low urinary frequency, respectively. This model also revealed 7.15 (95% CI 1.02–50.35) and 33.47 (95% CI 3.80–294.87) higher odds for screening positive for psychological distress among survivors who were treated with radiation therapy for their PCa diagnosis or were currently on medication for depression, anxiety or both compared with counterparts.



**Figure.** Frequency percentages of survivorship needs/stressors identified by Maritimes PCa survivors surveyed between 2017 and 2018

**Discussion**

Modern medicine has allowed patients with prostate cancer to expect excellent 15-year survival rates with PCa evolving into a chronic condition for most men with the disease.<sup>2</sup> However, the treatments and complications of PCa often result in patients experiencing a complex network of psychosocial and functional issues culminating in a significant decrease in quality of

life compared to men in the general population.<sup>9,13</sup> This can have a profound impact on the psychological distress PCa survivors experience, and men over 65 years of age are already known to be at the greatest risk of suicide as a result of mental distress compared to any other age group.<sup>14</sup> With the combination of survivorship time and number of patients affected by mental distress a high level of disease burden associated with mental distress in this population exists.

**Table.**

Multivariate logistic regression estimates, standard errors, Wald chi-square results and odds ratio for fit model predicting screening positive for mental health issues

	Estimate	Wald Chi-Square(1)	OR (95% CI)
Age	-0.05	0.47	0.95 (0.81–1.11)
Province	0.99	2.65	2.61 (0.82–8.27)
Education	-0.69	1.08	0.50 (0.14–1.85)
Past yr household income	0.81	3.61	2.24 (0.97–5.15)
Relationship status	3.45	3.37	31.63 (0.79–61.35)
Comorbidities	-0.79	1.12	0.45 (0.11–1.96)
Survivorship time	-0.01	0.01	0.99 (0.98–1.02)
Sum of current PCa survivorship stressors	0.39	6.17*	1.48 (1.09–2.01)
Radical prostatectomy	-1.10	0.89	0.33 (0.03–3.26)
Radiation	1.97	3.91*	7.15 (1.02–50.35)
Hormonal therapy	-1.50	1.93	0.22 (0.03–1.85)
Incomplete emptying	0.28	0.75	1.33 (0.70–2.52)
Frequency	-0.045	0.02	0.96 (0.49–1.88)
Intermittency	-0.15	0.21	0.86 (0.44–1.66)
Urgency	0.72	5.94*	2.05 (1.15–3.64)
Weak stream	-0.51	1.25	0.60 (0.25–1.47)
Straining	0.54	0.75	1.71 (0.51–5.73)
Nocturia	-0.42	1.02	0.66 (0.29–1.48)
Currently on medication for depression	3.51	10.00†	33.47 (3.80–294.87)

\* p <0.05.

† p <0.01.

The prevalence of distress in this study population (19.5%) supports the findings of a previous study of 50,856 PCa survivors that identified that 20.4% developed a mental health issue after their diagnosis.<sup>15</sup> While it is clear that this group of patients experiences high rates of psychological distress there is little known about what is driving the problem.<sup>9</sup> To study these relationships we evaluated concerns patients and survivors flagged as major issues in their life by examining a questionnaire designed to identify survivorship concerns. We also evaluated functional status by using the I-PSS prostate questionnaire. We have been able to make a direct connection between aspects of the I-PSS questionnaire, specifically voiding frequency, and the sum of survivorship concerns expressed by the survivors. Additionally, we developed a model that is accurate for 90% of the survivors as to whether they will screen positive for mental distress.

Of the many stressors assessed the most prevalent were “intimacy/sexuality” and “sleep.” The intimacy/sexuality concerns frequency we observed is congruent with that of another study that showed 57% of PCa survivors in their sample were concerned about the ability to satisfy their partner sexually.<sup>16</sup> It is likely these issues are frequent in this population because of the complications and side effects from prostate cancer treatments. A significant contributor to

sexuality and intimacy issues is erectile dysfunction that accompanies over 50% of men treated for prostate cancer.<sup>6,13,16</sup> These issues tend to be at the forefront of patient and physician minds when it comes to complications and causes of decreased quality of life. However, there are likely other issues that are not as obvious. Other aspects affecting intimacy could be the stress and concern that comes with a cancer diagnosis or the fear that a partner does not see them as a sexual being due to decreased sexual desire or arousal. While sexuality/intimacy was the most prevalent concern identified by survivors in this sample it should be noted that sexual function was not a predictor in the model. Future studies with larger sample sizes should consider assessing the predicting value of sexual function to the model we present here.

Lastly, results in this sample suggest the contribution of radiation therapy treatment to screening positive for psychological distress. All patients in this sample were treated with either potentially curable surgery or radiotherapy. However, surgery is usually reserved for less advanced cancer, while radiotherapy is chosen for older men with medical comorbidities, a risk factor for mental distress. Radiotherapy is also given after surgery in patients with more aggressive cancer and this increases the risk of long-term surgical complications.<sup>17</sup> Finally, radiotherapy is also used as a palliative treatment for men with metastatic PCa. In summary, radiotherapy is associated with a higher likelihood of side effects, more aggressive cancer and metastatic disease, all potential risk factors for poor mental health. While the small sample size precluded us from assessing effect modification in the current model, future studies should consider assessing the interaction between various treatment options for patients who received multimodal therapy to evaluate possible interactive contributions to mental health outcomes.

We are still in the early phase of trying to understand the effect prostate cancer and its treatments have on patients quality of life and mental health. Although no causality can be drawn, these data help us understand some relationships that exist between mental distress and patient experiences. This supports further characterization of the cause of mental distress to help develop models to mitigate risk factors with the goal of helping patients cope with their disease.<sup>18</sup>

Several limitations must be noted. Data are retrospective and self reported, therefore they may be subject to recall bias that may have affected the results. As results indicate associations, causality cannot be inferred. The sample size was relatively small. Survival bias may be a potential concern. Since multimorbidity increases the risk of death from PCa the proportion of cases with high multimorbidity will be lower in our analysis which could lead to an underestimate of the odds ratios. Future studies of larger sample size may consider evaluating the contribution of current status of the disease, the presence or

absence of recurrence, time between treatments, recovery time after surgery and the interaction with other cancer diagnoses and comorbidities which could play a significant role in the emergence of mental health issues in this population.

Nonetheless, the results reported here provide an important contribution to our understanding of the role played by treatment type, urinary function, and multimorbidity, along with survivorship stressors to screening positive for mental health distress. Patient and survivor educational programs aimed at improving urinary and physical function, along with information addressing the specific needs and stressors of patients with prostate cancer and PCa survivors are warranted.<sup>18–21</sup>

## Conclusion

Prostate cancer is a heterogeneous disease with a bright and rapidly evolving landscape. Now that survival rates are very high a focus toward the morbidity of mental distress is warranted. This study like others has confirmed that mental distress is prevalent in this population. We have demonstrated several factors associated with mental distress within a strong fitted model including radiation therapy, number of survivorship stressors, voiding dysfunction and age. Further steps will need to be taken to identify whether these are causative agents towards mental distress in patients with prostate cancer.

## Acknowledgments

We would like to thank all participants, clinicians and residents who donated their time and their personal health history to this project. A special thanks to Dr. Tetteh Ago for his unflagged support to the PI (GI) for promoting the survey among radiation oncologists and patients in the Maritimes provinces and Dr. Daniel Costa for supporting the project in Prince Edward Island. We would also like to express our deep appreciation to the Dalhousie Research Medical Foundation, and the Soillse Research Fund donors for their support for the Soillse Maritimes Prostate Cancer Quality of Life research.

## References

1. Canadian Cancer Society's Advisory Committee on Cancer Statistics: Canadian cancer statistics 2017. Toronto, Ontario, Canada: Canadian Cancer Society 2017. Available at [cancer.ca/Canadian-CancerStatistics-2017-EN.pdf](http://cancer.ca/Canadian-CancerStatistics-2017-EN.pdf). Accessed June 19, 2019.
2. Siegel R, DeSantis C, Virgo K et al: Cancer treatment and survivorship statistics, 2012. *CA Cancer J Clin* 2012; **62**: 220.
3. Klaassen Z, Arora K, Wilson S et al: Decreasing suicide risk among patients with prostate cancer: implications for depression,

- erectile dysfunction, and suicidal ideation screening. *Urol Oncol* 2018; **36**: 60.
4. Spoletini I, Gianni W, Caltagirone C et al: Suicide and cancer: where do we go from here? *Crit Rev Oncol Hematol* 2011; **78**: 206.
  5. Linden W, Vodermaier A, MacKenzie R et al: Anxiety and depression after cancer diagnosis: prevalence rates by cancer type, gender, and age. *J Affect Disord* 2012; **141**: 343.
  6. Institute of Medicine (US) Committee on Psychosocial Services to Cancer Patients/Families in a Community Setting: *Cancer Care for the Whole Patient: Meeting Psychosocial Health Needs*. Edited by NE Adler and AEK Page. Washington, D.C.: National Academies Press 2008; chpt 2, pp 51–80.
  7. Fervaha G, Izard JP, Tripp DA et al: Depression and prostate cancer: a focused review for the clinician. *Urol Oncol* 2019; **37**: 282.
  8. Grenard JL, Munjas BA, Adams JL et al: Depression and medication adherence in the treatment of chronic diseases in the United States: a meta-analysis. *J Gen Intern Med* 2011; **26**: 1175.
  9. Ilie G, Rutledge R and Sweeney E: Anxiety and depression symptoms in adult males with or without a lifetime history of prostate cancer. *Psychooncology* 2020; **29**: 280.
  10. Ilie G: A prostate cancer quality of life pilot project testing the feasibility of PROs data collection using an on-line survey infrastructure throughout the Maritimes; Interim Report April 2018. Soillse Scientist Research Working Document Series No. 1, 2018, Halifax, Canada. Available at <http://soillseprostatecancerqualityofliferesearch.che.dal.ca/wordpress/wp-content/uploads/2018/04/AnnualReportPCPRO2018.pdf>.
  11. Andrews G and Slade T: Interpreting scores on the Kessler psychological distress scale (K10). *Aust N Z J Public Health* 2001; **25**: 494.
  12. Kessler RC, Andrews G, Colpe LJ et al: Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med* 2002; **32**: 959.
  13. Zenger M, Lehmann-Laue A, Stolzenburg JU et al: The relationship of quality of life and distress in prostate cancer patients compared to the general population. *Psychosoc Med* 2010; **7**: Doc02.
  14. Centers for Disease Control and Prevention: National Center for Injury Prevention and Control: web-based injury statistics query and reporting system (WISQARS). Centers for Disease Control and Prevention 2005. Available at [www.cdc.gov/injury/wisqars](http://www.cdc.gov/injury/wisqars). Accessed June 19, 2019.
  15. Ravi P, Karakiewicz P, Roghmann F et al: Mental health outcomes in elderly men with prostate cancer. *Urol Oncol* 2014; **32**: 1333.
  16. Crowley SA, Foley SM, Wittmann D et al: Sexual health concerns among cancer survivors: testing a novel information-need measure among breast and prostate cancer patients. *J Cancer Educ* 2016; **31**: 588.
  17. Kishan AU, Cook RR, Ciezki JP et al: Radical prostatectomy, external beam radiotherapy, or external beam radiotherapy with brachytherapy boost and disease progression and mortality in patients with Gleason score 9-10 prostate cancer. *JAMA* 2018; **319**: 896.
  18. Ilie G, Mason R, Bell D et al: Development and initial evaluation of a multifaceted intervention to improve mental health and quality of life among prostate cancer survivors. *Int J Ment Health Addict* 2019; doi: [10.1007/s11469-019-00108-y](https://doi.org/10.1007/s11469-019-00108-y).
  19. Nahon I, Waddington GS, Dorey G et al: Assessment and conservative management of post-prostatectomy incontinence after radical prostatectomy. *Aust N Z Continence J* 2009; **15**: 70.
  20. Singh F, Newton RU, Baker MK et al: Feasibility of presurgical exercise in men with prostate cancer undergoing prostatectomy. *Integr Cancer Ther* 2017; **16**: 290.
  21. Singh F, Newton RU, Galvão DA et al: A systematic review of pre-surgical exercise intervention studies with cancer patients. *Surg Oncol* 2013; **22**: 92.

## Editorial Commentaries

This well written paper provides additional evidence that prostate cancer survivors are a population that is vulnerable to psychological distress. This paper builds new evidence about the drivers of this stress. As treatments for this disease continue to prolong life for these patients there is a growing need to focus on survivorship. The traditional focus of the urologist in this area is on treatment of urinary symptoms and erectile dysfunction. While vital, these are far from the only factors affecting quality of life for patients with prostate cancer. Furthermore, while sexual and urinary health affect psychological stress, in practice the reverse is often equally true. In a population already at such risk for mental and physical disease to diagnose and treat one without the other is insufficient.

In our practice we have implemented a multidisciplinary approach to prostate cancer from diagnosis through treatment and survivorship. Our clinic incorporates a nurse case manager who routinely screens for psychological stress. Oncology social work has been helpful toward this end as well. We believe that this model allows for more comprehensive care in these complex cases and helps to address the types of stressors described in this paper.

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Timothy Brand**  
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The authors of this manuscript present a well-designed retrospective study of an underreported aspect of definitive treatment for prostate cancer, and they are to be commended for their comprehensive approach and granularity of their data. Although the side effect profile of radiation or surgery is well understood, what is not yet well understood is how and why patients respond negatively. The consequences can range from regret<sup>1</sup> to self-inflicted bodily harm (reference 3 in article), and the authors of this current study report that issues are not limited simply to those undergoing surgery as post-radiation patients have a higher likelihood of distress than post-prostatectomy patients.

As patients undergoing prostate cancer treatments run the gamut both in terms of risk stratification and baseline functioning, managing expectations is an important aspect of

the preprocedure discussion. Ideally in the future we will be able to use a multimodality approach to identify at-risk individuals before procedures so as to institute interventions to mitigate the level of distress these patients experience after intervention.

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## Reference

1. Hoffman RM, Lo M, Clark JA et al: Treatment decision regret among long-term survivors of localized prostate cancer: results from the Prostate Cancer Outcomes Study. *J Clin Oncol* 2017; **35**: 2306.