Predictors of psychosocial distress 12 months after diagnosis with early and advanced prostate cancer

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ABSTRACT

Objective: To assess psychosocial distress in patients with early (localised) and advanced (metastatic) prostate cancer (PCA) at diagnosis (Time 1) and 12 months later (Time 2), and identify psychosocial factors predictive of later distress.

Design, participants and setting: Observational, prospective study of 367 men with early (211) or advanced (156) PCA recruited as consecutive attendees at clinics at seven public hospitals and practices in metropolitan Melbourne between 1 April 2001 and 30 December 2005. Both groups completed questionnaires at Time 1 and Time 2.

Main outcome measures: Health-related quality of life as assessed by the Short Form 36-item Health Survey; psychological distress, including depression and anxiety as assessed by the Brief Symptom Inventory; and coping patterns as assessed by the Mini-Mental Adjustment to Cancer scale.

Results: Over the 12 months, both the early and advanced PCA group showed reduced vitality and increased depression and anxiety; this effect was greater in the advanced PCA group. Mental health, social functioning and role-emotional functioning also deteriorated in the advanced group. Predictors of depression at Time 2 for the early PCA group were depression, vitality and a fatalistic coping pattern at Time 1; anxiety at Time 2 was predicted by anxiety and vitality at Time 1. In the advanced PCA group, depression at Time 2 was predicted by depression and mental health at Time 1; anxiety at Time 2 was predicted by anxiety, mental health, cognitive avoidance and lower anxious preoccupation at Time 1.

Conclusions: Men with early PCA experience decreasing vitality and increasing psychological distress over the 12 months following diagnosis; this trend is accelerated after diagnosis with advanced PCA. A fatalistic coping pattern at diagnosis of early PCA predicts later depression while cognitive avoidance and lower anxious preoccupation at diagnosis of advanced PCA predict later anxiety.

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Although prostate cancer (PCA) is both common and a major cause of cancer-related deaths, we have much to learn about its impact on men's psychological and social functioning.[1,2] Most studies to date have been cross-sectional in design, and so reveal little about how psychosocial factors interact and evolve as cancer treatment progresses over time.[1] A prospective study capturing the period following the diagnosis of early (localised and potentially curable) and advanced (metastatic and incurable) PCA can guide the development of preventive mental health strategies for each stage of this disease.[1]

We hypothesised that psychological distress would increase over the 12 months after diagnosis in men with both early and advanced PCA, with the trend being more marked in the advanced group. We also aimed to identify the contributions of the level of psychological distress, psychosocial functioning and different coping patterns employed at the time of diagnosis to levels of psychological distress 12 months later.

METHODS

Patients were consecutive clinic attendees at participating public hospitals and practices in metropolitan Melbourne between 1 April 2001 and 30 December 2005, and were recruited by their oncologists and urologists. The patients were newly diagnosed with either early or advanced PCA. Recruitment of patients with early PCA took place at the beginning of definitive treatment, such as prostatectomy or radiotherapy. Inclusion criteria for the early PCA group included histologically confirmed PCA, with a tumour–node–metastases (TNM) classification of T1–T3, N0, M0 (tumour stage, not advanced, no nodal involvement or metastases, and therefore patients were told their disease was potentially curable). Recruitment of patients with advanced PCA occurred after the patient had been told he had metastatic disease. These patients had evidence of tumour spread to lymph nodes and/or elsewhere in the body, and their cancer was thus classified as N1 and/or M1 (tumour stage, advanced, and therefore patients were told their disease was regarded as incurable). Exclusion criteria for both groups included inability to give informed consent, current diagnosis of another cancer except non-melanoma skin cancer, minimal understanding of English, psychosis, intellectual disability and dementia.

Each patient gave written consent to participate. Institutional ethics approval was obtained from the human research ethics committee at each of the seven participating hospitals and at the University of Melbourne.

Patients completed self-report questionnaires at the time of recruitment (Time 1), and again 12 months later (Time 2). Sociodemographic data were collected at Time 1 (Box 1).

The following describes questionnaires administered at Time 1 and Time 2.

Brief Symptom Inventory (BSI-53):[3] This is a 53-item questionnaire covering diverse psychological symptoms; it has good reliability (eg, coefficient alphas of 0.68–0.91) and established convergent and predictive validity.[4] It has been used extensively with cancer populations because it is sensitive to psychological adjustment. The BSI-53 has nine subscales (Box 2), including depression and anxiety, and a global General Severity Index (GSI) which comprises all 53 items.

Medical Outcomes Study Short Form 36-item Health Survey (SF-36):[5] This survey measures both physical and psychosocial aspects of health-related quality of life. It contains eight subscales, four covering physical health, and four concerned with mental health. Only the mental health subscales were used in this study: vitality (balance of energy and levels of fatigue); social functioning (performance of ordinary social activities, unaffected by physical or emotional problems); role-emotional function-

1 Sociodemographic characteristics at diagnosis (Time 1) of the men in the early and advanced prostate cancer groups*

Characteristic	Early prostate cancer group	Advanced prostate cancer group	*P*
Number of men	211	156	
Age in years			
Mean (SD)	66.2 (8.3)	70.1 (9.7)	<0.001
Range	43–92	42–90	
Marital status			
Married/defacto	0.783	0.830	0.47
Single/widowed/divorced/separated	0.217	0.170	
Occupational status			
Employed	0.368	0.193	0.001
Retired/unemployed/pension	0.632	0.807	
Country of birth			
Australia and New Zealand	0.785	0.738	0.08
United Kingdom and Ireland	0.075	0.069	
Europe	0.105	0.138	
Elsewhere	0.035	0.055	

*Data are proportion unless otherwise specified. ◆

ing (performance of work or other daily activities, again without interference from emotional problems); and mental health (the balance between nervousness and depression on the one hand, and a feeling of happiness and calmness on the other). Low scores on the four subscales indicate poorer functioning. The SF-36 is well validated and reliable.[6]

Mini-Mental Adjustment to Cancer scale (Mini-MAC): This is a 20-item version of the Mental Adjustment to Cancer scale.[7] It describes five coping styles encountered in research with cancer patients: fighting spirit (a determination to fight the illness and the adoption of an optimistic attitude); hopelessness (feelings of giving up and engulfment by the diagnosis and a pessimistic attitude); anxious preoccupation (constant preoccupation with cancer and feelings of devastation, anxiety, fear and apprehension); fatalism (patients put themselves in the hands of God or fate and take one day at a time); and avoidance (patients distract themselves and avoid thinking about the illness). The Mini-MAC has been validated and extensively used.[8] It provides a brief means of assessing associations between specific coping styles and adjustment to cancer over time.[9]

Statistical analysis

Descriptive statistics for both subsamples were examined to rule out any effects of site and treating clinician. As no significant differences emerged, the data were combined for subsequent analyses. Statistical analyses were conducted using SPSS software, version 14.0 (SPSS Inc, Chicago, Ill, USA).[10] Mixed-model multivariate analysis of variance (MANOVA) with independent variables of group (between-subjects) and time (within-subjects) was used to identify significant differences between groups and changes over time. Hierarchical multiple regression analysis (HMRA) was used to identify Time 1 measures that predicted depression and anxiety at Time 2. Two separate analyses were conducted for the early PCA and advanced PCA groups, one using Time 2 BSI depression scores, and the other using Time 2 BSI anxiety scores, as the dependent variables. In all four analyses, the relevant scores at Time 1 were entered first to partial out any effects of initial distress. The remaining Time 1 scores were then entered to identify any unique and significant contributions.

RESULTS

At Time 1, participants comprised 211 men with early PCA and 156 men with advanced PCA. Initial PCA treatments for the early PCA group were active surveillance (36/211; 17%), radiotherapy (112/211; 53%) and radical prostatectomy (63/211; 30%). More than half of the advanced PCA group were receiving luteinising hormone-releasing hormone analogues, while 70/156 (45%) were receiving anti-androgen drugs.

Details of socio-demographic characteristics of the participants are compared in Box 1. There were two differences between the groups: the advanced group was older and had a greater proportion of men who were retired.

At Time 2, participants comprised 178 men with early PCA (84% of the original group), and 87 men with advanced PCA (56% of the original group). These men who continued to participate were compared with those who participated at Time 1 only.

For the early PCA group, there were no significant differences in terms of age, and scores on the SF-36 role-emotional, social functioning and vitality subscales, but significant differences emerged in SF-36 mental health and BSI depression and anxiety scores. In all instances, the men who only completed Time 1 reported greater dysfunction at Time 1 than those who continued to participate at Time 2.

For the advanced group, the men who only participated at Time 1 had significantly greater dysfunction on all four SF-36 subscales (vitality, social functioning, role-emotional functioning and mental health) as well as on the BSI depression subscale. No other differences were detected.

Changes in psychosocial adjustment

Descriptive statistics for each group on the self-report measures at Time 1 and at Time 2 are shown in Box 2.

MANOVA showed significant interactions between group and time for six of the BSI scales (Box 2). The advanced PCA group reported greater increases in psychological distress over 12 months on the obsessive compulsive behaviour, depression, anxiety, hostility and phobic anxiety subscales. Effect sizes were between 0.02 and 0.08. The advanced PCA group also had significantly higher depression scores than the early PCA group. The early group's somatisation scores increased significantly over 12 months, but their BSI scores were otherwise relatively stable.

Significant group by time interactions for all four SF-36 psychological subscales were also apparent (Box 2). The advanced PCA group showed greater deterioration than their early PCA counterparts over 12 months on vitality, social functioning, role-emotional functioning and mental health. Effect sizes were between 0.05 and 0.08. In the early PCA group, only the vitality scale score declined significantly over time.

2 Mean scores (SDs) for men with early and advanced prostate cancer on measures of psychosocial adjustment at diagnosis (Time 1) and at 12-month follow-up (Time 2)

	Early prostate cancer group		Advanced prostate cancer group	
Measure	Time 1	Time 2	Time 1	Time 2
SF-36 subscales				
Vitality*	66.77 (19.93)	63.54 (19.92)	58.74 (21.38)	50.75 (25.18)
Social functioning†	83.45 (21.68)	84.94 (21.60)	81.10 (22.75)	69.20 (29.90)
Role-emotional†	79.96 (34.60)	82.02 (32.30)	79.76 (34.33)	60.32 (46.71)
Mental health‡	79.03 (16.81)	80.74 (15.05)	79.77 (15.54)	74.90 (20.40)
BSI subscales				
Somatisation	0.30 (0.39)	0.39 (0.45)	0.55 (0.57)	0.70 (0.65)
Obsessive compulsive behaviour‡	0.52 (0.60)	0.55 (0.53)	0.54 (0.57)	0.77 (0.74)
Interpersonal sensitivity	0.22 (0.42)	0.18 (0.35)	0.24 (0.42)	0.29 (0.49)
Depression‡	0.23 (0.38)	0.25 (0.40)	0.25 (0.41)	0.45 (0.66)
Anxiety†	0.27 (0.44)	0.22 (0.33)	0.26 (0.43)	0.39 (0.54)
Hostility*	0.23 (0.32)	0.23 (0.31)	0.27 (0.36)	0.38 (0.53)
Phobic anxiety*	0.08 (0.26)	0.06 (0.17)	0.11 (0.28)	0.19 (0.41)
Paranoid ideation	0.18 (0.34)	0.19 (0.38)	0.16 (0.27)	0.26 (0.43)
Psychoticism	0.11 (0.24)	0.12 (0.23)	0.13 (0.24)	0.19 (0.32)
BSI General Severity Index†	0.25 (0.31)	0.26 (0.27)	0.31 (0.33)	0.44 (0.45)

SF-36 = Short Form 36-item Health Survey. BSI = Brief Symptom Inventory (53-item).
* $P < 0.05$; † $P < 0.001$; ‡ $P < 0.01$ for the analysis of variance group by time interaction term. ◆

Predictors of psychological distress scores at 12 months

The results of the HMRA, including significant predictor beta weights, are shown in Box 3.

In the early PCA group, variance in depression at Time 2 was accounted for by three Time 1 variables — depression, vitality and fatalism. Time 1 BSI depression alone accounted for 36.5% of the variance. Vitality and fatalism made further unique contributions, with all three variables accounting for 41.1% of the variance ($F[3,170] = 29.48$; $P < 0.001$). Similarly, Time 1 BSI anxiety alone accounted for 48.9% of the variance in anxiety at Time 2, while anxiety and vitality together accounted for 51.9% of the variance ($F[2,175] = 94.46$; $P < 0.001$). No coping variable contributed to predicting anxiety at Time 2.

In the advanced PCA group, variance in depression at Time 2 was accounted for by two Time 1 variables: depression and mental health. Time 1 BSI depression alone accounted for 36.5% of the variance, and, with mental health, accounted for 42.0% of the variance ($F[2,82] = 29.75$; $P < 0.001$). No coping variables made a significant contribution to predicting depression at Time 2. Similarly, Time 1 BSI anxiety alone accounted for 34.5% of the variance in anxiety at Time 2, while anxiety, cognitive avoidance, lower anxious preoccupation, and mental health together accounted for 45.1% of the variance ($F[4,79] = 16.25$; $P < 0.001$).

DISCUSSION

Our first aim was to examine psychosocial adjustment in men with early and advanced PCA over 12 months following diagnosis. As predicted, those with advanced PCA fared worse than those with early disease; they showed more substantial deterioration on most BSI subscales, as well as on the GSI, and all SF-36 psychosocial dimensions (vitality, social functioning, role-emotional functioning, and mental health). The early PCA group only showed deterioration in

3 Hierarchical multiple regression analyses of Brief Symptom Inventory depression and anxiety scores at 12-month follow-up (Time 2) on wellbeing and coping measures at diagnosis (Time 1), for the early and advanced prostate cancer groups

	Early prostate cancer group		Advanced prostate cancer group	
Outcome variable	Predictor	Beta	Predictor	Beta
BSI — depression at Time 2	BSI depression (Time 1)	0.48*	BSI depression (Time 1)	0.39†
	SF-36 vitality (Time 1)	−0.24†	SF-36 mental health (Time 1)	−0.32†
	Mini-MAC fatalism (Time 1)	0.13‡	Mini-MAC cognitive avoidance (Time 1)	0.07
	Mini-MAC fighting spirit (Time 1)	−0.09	Mini-MAC anxious preoccupation (Time 1)	−0.15
	$R = 0.64$; $R^2 = 0.414$; $F(4,169) = 29.84$*		$R = 0.66$; $R^2 = 0.437$; $F(4,79) = 15.32$*	
BSI — anxiety at Time 2	BSI anxiety (Time 1)	0.62*	BSI anxiety (Time 1)	0.33†
	SF-36 vitality (Time 1)	−0.19†	SF-36 mental health (Time 1)	−0.35†
	Mini-MAC fatalism (Time 1)	0.03	Mini-MAC cognitive avoidance (Time 1)	0.22‡
	Mini-MAC fighting spirit (Time 1)	−0.05	Mini-MAC anxious preoccupation (Time 1)	−0.21*
	$R = 0.72$; $R^2 = 0.531$; $F(4,169) = 47.87$***		$R = 0.67$; $R^2 = 0.451$; $F(4,79) = 16.25$*	

SF-36 = Short Form 36-item Health Survey. BSI = Brief Symptom Inventory (53-item). Mini-MAC = Mini-Mental Adjustment to Cancer scale (20-item).
‡ $P < 0.05$; † $P < 0.01$; * $P < 0.001$. ◆

SF-36 vitality scores. Thus, it appears that psychological distress in men with advanced PCA is similar to that observed in women with advanced breast cancer, although not so marked.[11] In contrast, men with early PCA showed far less deterioration in psychosocial adjustment — a pattern very different to that seen in early-stage breast cancer.[12]

Our second aim was to identify predictors of later psychological distress in both groups of men with PCA. In the early PCA group, depression at Time 2 was predicted by lower vitality and a fatalistic coping pattern at Time 1, after accounting for Time 1 depression. In men with advanced disease, mental health scores on the SF-36 predicted psychological distress at Time 2, while greater use of cognitive avoidance and less use of anxious preoccupation at Time 1 predicted anxiety at Time 2. These results suggest that men with early and advanced PCA who experience higher levels of depression and anxiety shortly after diagnosis are more likely to be depressed and anxious a year later. In addition, fatalism contributes to later depression in men with early PCA, while higher cognitive avoidance combined with lower anxious preoccupation contributes to anxiety in men with advanced PCA. Lower vitality is important in predicting later anxiety and depression in early PCA, and poor perceived mental health is similarly predictive in advanced PCA.

A comparison of psychosocial adjustment in men with localised, metastatic and hormone-resistant PCA cross-sectionally found better adjustment in the localised (early-stage) group than the two groups with more advanced cancer.[13] A study of depression and anxiety over the first 6 months after diagnosis of various cancers, including PCA found that the degree of depression and anxiety at diagnosis was lower in PCA than other cancers, but was a more robust predictor of depression and anxiety 6 months later.[14] A 2005 review concluded that problem-focused and emotion-focused coping styles were associated with better adjustment in men with PCA, whereas avoidance-type strategies were associated with poorer adjustment.[15] This tallies with our finding that lower anxious preoccupation and greater cognitive avoidance in the advanced group at Time 1 predicted greater psychological distress at Time 2.

Although our study design has numerous strengths, including stratification by disease stage and reasonably long-term follow-up, a limitation was the degree of attrition, especially in the advanced group, leading to possible selection bias in the follow-up data. A degree of attrition is unavoidable when studying advanced cancers prospectively. A comparison of Time 1 data collected from the participants who did and did not complete the follow-up at Time 2 (12 months) suggests that those who did not complete the Time-2 follow-up were more distressed and had higher dysfunction, so our data may well underestimate the extent of later morbidity.

It appears that men living with PCA experience decreased vitality and increased psychological distress over the 12 months following initial diagnosis with early disease, while the situation goes from bad to worse over the 12 months after a diagnosis of advanced PCA. Psychological interventions that encourage problem-focused and emotion-focused coping and that challenge avoidant tendencies, while instilling hope and a sense of control and calm, might represent a preventive mental health strategy for Australian men faced with this increasingly common cancer.

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COMPETING INTERESTS

None identified.

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