

# Assessment and acceptance of cancer in prostate cancer patients

## Abstract

**Background:** Malignant prostate cancer is associated with many negative psychological consequences in patients. Therefore, it is reasonable to explore intensity of the acceptance of cancer and the factors that determine its level. This study aims to determine which types of the appraisal of illness predict the acceptance of illness and to what extent.

**Patients and methods:** This study was conducted in a group of forty-five prostate cancer inpatients for radiotherapy. The following tools measuring the appraisal of illness and acceptance of illness were used: the Disease-Related Appraisals Scale (DRAS) by Janowski, Steuden, Kurylowicz and Nieśpiałowska-Steuden, and the Acceptance of Illness Scale (AIS) by Janowski and Steuden.

**Results:** Higher levels of satisfaction with life despite the disease were associated with a lower level of appraisal of illness as an obstacle/loss, a lower sense of harm and a greater tendency to interpret illness as a value. Reconciliation with the disease was negatively associated with the appraisal of illness as a threat and obstacle/loss. Self-distancing from the disease was negatively associated with the appraisal of illness as a threat and significant situation. The overall acceptance of illness score was negatively associated with the appraisal of illness as a threat and significant situation.

**Conclusions:** The appraisal of illness as a challenge and obstacle/loss was the most common predictor of the acceptance of illness in prostate cancer patients. A greater level of appraisal of illness as a challenge contributes to a greater level of acceptance of illness in patients. A lower level of appraisal of illness as an obstacle/loss contributes to a greater level of acceptance of illness in prostate cancer patients.

*Palliat Med Pract 2022; 16, 3: 134–141*

**Key words:** prostate cancer, acceptance of illness, appraisal of illness

## Introduction

### Malignant prostate cancer — epidemiology and treatment

Prostate cancer is common in men, especially in the elderly men. In its early stages, prostate cancer usually

does not develop clinical symptoms that are similar to benign prostatic hyperplasia (BPH) and for this reason may go unrecognised. Some patients present with lower urinary tract symptoms, which are more likely to be a consequence of the coexistence of BPH. Sometimes the first symptom of generalised cancer is bone pain

#### Address for correspondence:

Agata Wolanin

Ignacy Łukasiewicz Rzeszów University of Technology

al. Powstańców Warszawy 12, 35–959 Rzeszów, Poland

e-mail: a.wolanin@prz.edu.pl



Palliative Medicine in Practice 2022; 16, 3, 134–141

Copyright © Via Medica, ISSN 2545–0425, e-ISSN: 2545–1359

DOI: 10.5603/PMPI.2022.0012

This article is available in open access under Creative Common Attribution-Non-Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0) license, allowing to download articles and share them with others as long as they credit the authors and the publisher, but without permission to change them in any way or use them commercially.

due to metastases [1]. The most important risk factors for prostate cancer include age (diagnosis usually after 65 years of age) and genetic predisposition [1]. Androgens and a diet high in saturated fat play an important role in the development of prostate cancer [2].

In men, prostate cancer currently represents 20.6% of malignant tumour cases and a major cause of cancer deaths (10.3% of malignant tumour deaths in men, the number of deaths was 5,618). Since 2016, prostate cancer has been the most common cancer in men, with the highest increase in incidence rate. At the same time, there has been a stability of mortality and improvement in survival rates. In 2019, the number of cases of malignant prostate cancer was 17,638 [3]. In 2020, there were 1,414,259 cases and 375,304 deaths of prostate cancer worldwide [4].

Treatment of prostate cancer can be divided into radical and palliative, depending on the stage of the disease [1]. Radical treatment includes surgical management, which is used for patients with localised prostate cancer (cT1-2 N0 M0) who have an expected survival time of at least 10 years. Radical radiotherapy (RTH) in the form of teletherapy and/or brachytherapy is used for patients with cT1-T3 N0 M0 stage and in selected cases T4 and N (+). Hormone therapy is also used in combination with radical RTH to increase its efficacy [1].

A therapy with a palliative approach that is used for patients who are not eligible for radical therapy is hormone therapy (HTH), which slows down the progression of the disease but does not lead to a cure. It is a basic conservative management of advanced disease that involves eliminating endogenous androgens or blocking androgen receptors in tumour cells. The basis of treatment is that prostate cancer exhibits androgen dependence [1]. Radiotherapy is also used in palliative treatment, mainly to reduce pain caused by bone metastases. Palliative chemotherapy is also used in patients with metastatic castration-resistant prostate cancer (mCRPC) [1].

### **Psychological consequences of prostate cancer**

Prostate cancer patients experience difficulties that are common and shared by patients diagnosed with different types of cancer, such as pain, fatigue and treatment complications. The mental life of prostate cancer patients, in addition to general reactions to illness that are common to all cancer patients, reveals low perception of own sexual attractiveness, severe mood changes, weakness, fatigue and sleep problems [5]. Moreover, androgen-blocking treatment may also sometimes cause cognitive impairment [6].

Prostate cancer-specific areas of quality of life that are particularly important include coping with body

image, dysfunction in the area of sexual and physical intimacy, and infertility [7]. Psychological reactions to prostate cancer depend, among other things, on the occurrence of important life events and changes, such as widowhood or retirement; the availability of support; the death of family members or friends, especially if the death was caused by cancer; and any psychiatric treatment in the past. Uncertainty while waiting for diagnostic test results, the choice of treatment method and the expectation of treatment side effects, e.g. sexual dysfunction, urinary incontinence, weakness, fatigue, or pain, may affect patient's mood and contribute to a higher tendency to irritability and reacting with anxiety [8]. One study [9] aimed to detect determinants of the presence and severity of anxiety and depression and to isolate those aspects of the prostate cancer diagnostic process that cause the most stress in men under study. The most stressful event proved to be waiting for the biopsy result.

In patients being treated for prostate cancer, sexual problems occur due to many overlapping causes. These include the cancer itself, surgery, radiation, HTH, and ageing [10]. Urinary incontinence occurs due to postoperative complications and after exposure to radiation and causes difficulties in social situations [11]. Pain is a common symptom in advanced prostate cancer and can be difficult to manage. Patients in pain are more likely to have symptoms of depression and anxiety compared to patients without pain. The pain can even lead to suicidal tendencies. Mood changes in prostate cancer patients are not necessarily related to the stage of the disease [12]. Weakness and fatigue are particularly difficult for men who, until the onset of the disease, were active and lived independent lives. Fatigue and weakness can be caused by the disease itself, HTH, radiation, painkillers, or steroids. Hot flashes also occur [13]. Follow-up examinations during and after therapy and waiting for PSA (prostate-specific antigen) test results cause anxiety about recurrence or progression of the disease [14].

In a study involving prostate cancer patients [15], feelings of anxiety and cancer diagnosis itself contributed most to psychological distress. Sixteen (16) percent of patients had elevated levels of distress and six (6) percent exhibited symptoms of serious mental health issues. There were no higher levels of anxiety or depression in prostate cancer patients compared to a group of healthy individuals of the same age. Lack of positive support, harmful interactions, the threat posed by the illness, stage of illness and age were predictors of mental health, and there was a weak link between social support and physical health.

The discussion of different treatment options before prostate cancer therapy significantly contributed

to the improvement of patients' emotional state one month and six months after therapy. Discussing possible options in one's social environment made it possible to predict a reduction in negative affect one month and six months after therapy. Having a discussion with the doctor was a predictor of increased positive affect one month after therapy. Patients who spent more time discussing possible treatment options with family and friends also reported increased feelings of social support and emotional expression before therapy. The above-mentioned ways of coping reduced intrusive thoughts, which were consequently a predictor of improvement in emotional functioning [16].

### Appraisal and acceptance of illness in prostate cancer

Important variables related to psychological coping with cancer include, among other things, the appraisal and acceptance of illness [17]. The appraisal of the importance of illness is one of the processes that mediate between the stressful situation regarding the onset of illness and its effects [18]. Based on the transactional theory of stress [19], a cognitive interpretation of the situation — i.e. an initial evaluation (as harm/loss, threat, or challenge) — must occur to be able to discuss a stressful event. In a health emergency, the initial evaluation can affect the assessment of coping capacity, the use of specific coping strategies and the effectiveness of resolving the stressful relationship [20].

In a study concerning coping with illness in prostate cancer patients, it was found that the appraisal of illness as a loss was associated with increased depression, while the appraisal of illness as a threat was associated with increased anxiety [21]. In another study [22], prostate cancer patients who appraised prostate cancer as an obstacle or loss had poorer physical and mental health. Patients who appraised prostate cancer as an obstacle/loss or threat were more likely to manage stress through emotion-focused strategies. An appraisal of the diagnosis received as a challenge fostered the use of problem-focused coping strategies.

A determinant of adaptation to living with chronic illness is the acceptance of illness [23]. The acceptance of illness means recognising and understanding the limitations and losses associated with it [24]. The acceptance of illness determines the emotional way of functioning in and adapting to the illness, which is manifested in the low intensity of negative reactions and negative emotions associated with the illness. The greater the level of acceptance of illness, the better the adjustment to illness [17]. This study aims to show how the cognitive appraisal of illness is related to the

acceptance of illness in prostate cancer patients. It was hypothesised that the cognitive appraisal of illness could explain the level of acceptance of illness in prostate cancer patients.

## Patients and methods

### Patients

The study involved forty-five patients diagnosed with prostate cancer and undergoing radical treatment. The mean age of male patients was 64.15 (min. = 44, max. = 79, SD = 7.96). The study involved patients undergoing treatment in the radiotherapy department. Ethical approval to conduct the study was obtained from the bioethics committee of the Institute of Psychology at the John Paul II Catholic University of Lublin.

### Research tools

#### DRAS

DRAS [18], is a Polish tool that is based on the initial evaluation of a stressful situation according to Lazarus and Folkman's transactional stress theory [19] and Lipowski's [25] approach to illness perception. The initial evaluation of a stressful situation according to Lazarus and Folkman includes threat, challenge, and harm/loss. Lipowski's theory of disease-related appraisal includes the following categories: illness as a challenge, an enemy, a punishment, a weakness, a relief, a benefit, a loss, a value. This research tool contains forty-seven statements, rated on a 5-point scale (yes — rather yes — I don't know — rather no — no). The following subscales apply:

1. Threat — illness disrupts a state of balance and security, disrupts plans for the future, creates fear and anxiety about health and social standing;
2. Benefit — secondary gains of illness, justification to others and oneself, release from duties and responsibilities, provides a sense of relief, an opportunity to escape from other problems, allows satisfaction of the need to receive care and affection from others, a motivation to obtain material benefits;
3. Obstacle/loss — illness causes limitations in daily life (loss of opportunities, plans, hopes, giving up things that brought satisfaction and joy in the past);
4. Challenge — illness as a difficult situation to be overcome with the means available, illness as an enemy, a necessary struggle, a life challenge, a test;
5. Harm — a random life event, injustice and harm, misfortune, punishment, failure to find meaning in suffering;
6. Value — although not easy to understand, illness has a deeper meaning, gives an opportunity to grow, appreciate the value of life, re-evaluate life;

7. Importance — a control scale: to what extent the illness is an important life event;

The psychometric properties of this tool are satisfactory. The reliability of individual subscales ranges from 0.64 to 0.87. The accuracy was estimated using the exploratory factor analysis. This resulted in seven factors explaining 52.02% of the variance, according to the theoretical model of the method that is formed by seven subscales.

### **Scale of Acceptance of Living with Disease**

An experimental version of this tool was used in this study [26]. The scale does not measure a patient's identification with their illness in the sense of being a sick person, but it does measure their acceptance of illness that they are trying to cope with. This research tool contains twenty statements, rated on a 4-point scale (yes — rather yes — rather no — no).

The measurement includes three subscales and an overall score, which is the sum of all points. The first subscale is "Satisfaction with life despite the disease", in which a high score means that the patient feels happy, fulfilled, cheerful, has a positive mood, thinks that their life is successful and meaningful despite their illness, and does not give in to difficulties. The second subscale is "Reconciliation with the disease", in which a high score means that the patient thinks that it is possible to live with their illness, coexist with their illness despite difficulties and learn to control emotions. The third and final subscale of this tool is "Self-distancing from the disease", in which a high score means that the patient is little concerned with their illness, pushes away thoughts of their illness, distances themselves from the symptoms, and displays involvement in various activities. The psychometric properties of this scale are satisfactory. Internal consistency reliability (Cronbach's alpha) is 0.90 for the subscale "Satisfaction with life despite the disease", 0.80 for the subscale "Reconciliation with the disease", 0.69 for the subscale "Self-distancing from the disease" and 0.91 for the total score.

## **Results**

The Pearson's  $r$  correlation analysis and the regression analysis were used for calculating the results. Results for which  $p \leq 0.05$  were considered statistically significant. The used analyses are parametric and include the assumption of a normal distribution of the measured variables. The multiple regression analysis enables more than one independent variable to be included simultaneously in the dependency model for the dependent variable.

In the group of prostate cancer patients surveyed, each of dimensions of the acceptance of illness

was associated with the appraisal of illness (Table 1). Higher levels of satisfaction with life despite the disease were associated with a lower level of appraisal of illness as an obstacle/loss ( $r = -0.50$ ), a lower sense of harm ( $r = -0.32$ ) and a greater tendency to interpret illness as a value ( $r = 0.37$ ). The dimension of the acceptance of illness, which is related to reconciliation with the disease, was negatively associated with the appraisal of illness as a threat ( $r = -0.33$ ) and obstacle/loss ( $r = -0.45$ ), indicating that the appraisal of illness as a threat and obstacle/loss co-occurs with poorer reconciliation with the disease. The dimension of the acceptance of illness, involving self-distancing from the disease, was negatively associated with the appraisal of illness as a threat ( $r = -0.30$ ) and the appraisal of illness as a significant situation ( $r = -0.38$ ). The overall acceptance of illness score, which is the sum of the above-mentioned subscales, was negatively associated with the appraisal of illness as a threat ( $r = -0.33$ ) and the appraisal of illness as a significant situation ( $r = -0.38$ ).

In the regression analysis, some predictors of the acceptance of illness were extracted in patients surveyed. The multiple regression analyses were performed for individual dimensions of the acceptance of illness (dependent variables), and types of illness' appraisal were included as predictors of the acceptance of illness.

In the case of the acceptance of illness in terms of satisfaction with life despite the disease, the appraisal of illness as an obstacle/loss was found to be a significant predictor based on regression coefficients (Table 2) ( $b = -0.38$ ;  $\beta = -0.68$ ;  $p < 0.01$ ). Standardised beta coefficients indicate that the greater the level of appraisal of illness as an obstacle/loss, the lower the level of acceptance of illness in terms of satisfaction with life despite the disease. The model provides a good fit to the data [ $F(7.37) = 3.75$ ;  $p < 0.001$ ] and helped to explain 30% of variance in the acceptance of illness (dependent variable).

For the "Reconciliation with the disease" subscale (Table 3), a significant predictor was found to be the appraisal of illness as a challenge ( $b = 0.31$ ;  $\beta = 0.39$ ;  $p < 0.01$ ). Standardised beta coefficients indicate that the greater the level of appraisal of illness as a challenge, the greater the level of acceptance of illness in terms of reconciliation with the disease. The model provides a good fit to the data [ $F(7.37) = 2.73$ ;  $p < 0.001$ ] and helped to explain 22% of variance in the acceptance of illness ( $r^2 = 0.22$ ).

A relevant predictor of the acceptance of illness in terms of self-distancing from the disease (Table 4), was the appraisal of illness as a significant situation ( $b = -0.38$ ;  $\beta = -0.49$ ;  $p < 0.05$ ). Standardised beta coefficients indicate that the greater the level of

Table 1. Means and correlations for the illness' appraisal and acceptance of illness

	M	SD	Threat	Benefit	Obstacle	Challenge	Harm	Value	Importance	Satisfaction	Reconciliation	Acceptance
Threat	27.44	8.08										
Benefit	19.18	5.96	0.16									
Obstacle/loss	21.96	8.10	0.56*	0.57*								
Challenge	24.33	3.50	0.40*	0.06	0.17							
Harm	20.60	6.26	0.62*	0.38*	0.57*	0.23						
Value	20.82	5.86	-0.01	0.28	-0.18	0.10	-0.12					
Importance	17.56	3.93	0.67*	0.23	0.31*	0.43*	0.44*	0.39*				
Satisfaction	31.40	4.58	-0.25	-0.04	-0.50*	0.10	-0.32*	0.37*	0.02			
Reconciliation	20.27	2.71	-0.33*	-0.25	-0.45*	0.20	-0.24	0.09	-0.20	0.62*		
Acceptance	66.29	8.67	-0.33*	-0.07	-0.47*	0.12	-0.26	0.19	-0.18	0.87*	0.86*	
Self-distancing	14.62	3.02	-0.30*	0.07	-0.18	0.03	-0.04	-0.09	-0.38*	0.44*	0.63*	0.76*

\*p < 0.05

appraisal of illness as a significant situation, the lower the level of acceptance of illness in terms of self-distancing from the disease. The model provides a good fit to the data [F(7.37) = 2.16; p < 0.001] and helped to explain 16% of variance in this variable (r<sup>2</sup> = 0.16).

The global score of the acceptance of illness (Table 5) had two significant predictors, in the form of the appraisal of illness as an obstacle/loss (b = -0.62; beta = -0.58; p < 0.01) and as a challenge (b = 0.75; beta = 0.30; p < 0.05). Standardised beta coefficients indicate that the greater the level of appraisal of illness as a significant situation, the lower the level of acceptance of illness. The model provides a good fit to the data [F(7.37) = 2.82; p < 0.001] and helped to explain 22% of variance in the acceptance of illness.

### Discussion

The hypothesis that the appraisal of illness explains the level of acceptance of cancer in prostate cancer patients was proved to be true. Different types of the illness' appraisal proved to be predictors of individual dimensions of the acceptance of illness. The results of the regression analysis indicate that such types of illness' appraisal as an obstacle/loss, a challenge and an important life event are able to predict the level of acceptance of illness. Treating the illness as a challenge enhances the feeling of positive emotions in a difficult situation and taking actions aimed at fighting the illness. It also encourages patients to undertake and continue treatment and to comply with recommendations, which consequently contributes to the acceptance of illness. The appraisal of illness as an obstacle/loss contributes to the emergence of negative emotions, especially sadness and anger, and a passive attitude towards the need for treatment, and reduces the level of acceptance of illness. Another Polish study of prostate cancer patients reports a high level of acceptance of illness in this group compared to other patients and reveals that the level of acceptance of illness varies by income and education level [27].

The importance of illness is open to subjective interpretation. Therefore, it can be changed, which is important in terms of the negative emotional changes taking place in patients with a negative appraisal of their illness and in terms of the positive emotional changes in the case of a more positive appraisal. The appraisal of illness as an obstacle and harm contributes to increased anxiety and lowered mood. The study indicates links between these types of appraisals and a lower level of acceptance of illness. Another study reports the presence of relatively high levels of depression and anxiety in prostate cancer patients undergoing treatment [28], so it can be concluded

**Table 2. A regression model for the dependent variable "Satisfaction with life despite the disease"**

N = 45	b*	Standard error with b*	b	Standard error with b	t(37)	p
Absolute term			27.97	4.63	6.04	0.001
Threat	0.08	0.23	0.05	0.13	0.35	0.728
Benefit	0.35	0.19	0.27	0.15	1.85	0.072
Obstacle/loss	-0.68	0.22	-0.38	0.12	-3.14	0.003
Challenge	0.17	0.14	0.22	0.19	1.18	0.246
Harm	-0.18	0.18	-0.13	0.13	-1.02	0.315
Value	0.08	0.18	0.07	0.14	0.48	0.637
Importance	0.07	0.21	0.08	0.24	0.34	0.734

\*beta standardized coefficient

**Table 3. A regression model for the dependent variable "Reconciliation with the disease"**

N = 45	b*	Standard error with b*	b	Standard error with b	t(37)	p
Absolute term			18.36	2.91	6.31	0.001
Threat	-0.23	0.24	-0.08	0.08	-0.95	0.346
Benefit	-0.08	0.20	-0.04	0.09	-0.38	0.706
Obstacle/loss	-0.34	0.23	-0.11	0.08	-1.49	0.144
Challenge	0.39	0.15	0.31	0.12	2.63	0.012
Harm	0.13	0.19	0.06	0.08	0.70	0.489
Value	0.10	0.19	0.04	0.09	0.51	0.614
Importance	-0.19	0.22	-0.13	0.15	-0.88	0.386

\*beta standardized coefficient

**Table 4. A regression model for the dependent variable "Self-distancing from the disease"**

N = 45	b*	Standard error with b*	b	Standard error with b	t(37)	p
Absolute term			14.52	3.37	4.31	0.001
Threat	-0.07	0.25	-0.03	0.09	-0.28	0.780
Benefit	0.30	0.21	0.15	0.11	1.40	0.170
Obstacle/loss	-0.34	0.24	-0.13	0.09	-1.43	0.160
Challenge	0.27	0.16	0.23	0.13	1.70	0.098
Harm	0.23	0.20	0.11	0.10	1.16	0.255
Value	-0.05	0.19	-0.02	0.10	-0.24	0.811
Importance	-0.49	0.23	-0.38	0.18	-2.14	0.039

\*beta standardized coefficient

that the cognitive appraisal of illness may considerably explain and influence this state.

Another study concerning prostate cancer patients [29] reveals that self-efficacy and stress together explain more than half of the variance in anxiety and depression. Self-efficacy was associated with good emotional adjustment. Perceived global stress and specific (disease-related) stress were also explained. According to the authors of that study, the results extend the understanding of the role of efficacy

beliefs and stress appraisal in predicting emotions in men at diagnosis and identify those at risk of poor adjustment.

In a study concerning stress-coping strategies in prostate cancer patients undergoing HTH, links were found between fourteen coping strategies and the mechanism of personal growth in the experience of illness difficulties (benefit finding). Strategies such as acceptance, positive re-evaluation and turn to religion explained 35% of variance in positive changes caused



**Table 5. A regression model for the dependent variable of the overall dimension of acceptance of illness**

N = 45	b*	Standard error with b*	b	Standard error with b	t(37)	p
Absolute term			60.85	9.27	6.57	0.001
Threat	-0.05	0.24	-0.06	0.26	-0.23	0.821
Benefit	0.27	0.20	0.39	0.29	1.31	0.197
Obstacle/loss	-0.58	0.23	-0.62	0.24	-2.56	0.015
Challenge	0.30	0.15	0.75	0.37	2.03	0.049
Harm	0.02	0.19	0.03	0.26	0.13	0.896
Value	0.06	0.19	0.09	0.28	0.31	0.758
Importance	-0.19	0.22	-0.43	0.48	-0.88	0.382

\*beta standardized coefficient

by struggling with adversity. The study identifies the variable of acceptance understood as a strategy for coping with the stress of living with illness as beneficial, although this is a slightly different understanding of acceptance from the holistic acceptance of illness [30].

The results of that study have some relevance of application. The cognitive appraisal of cancer-related situation has important implications for the level of acceptance of illness. The appraisal of illness as a challenge supports a greater level of acceptance of illness, whereas the appraisal of illness as an obstacle/loss predicts a lower level of acceptance of illness. Therefore, psychotherapeutic interventions aimed at changing the interpretation of the disease situation can be offered to prostate cancer patients. By changing their cognitive appraisal of the situation, patients can increase their acceptance of their illness and treatment and consequently improve their quality of life.

ACT (acceptance and commitment therapy) is a type of psychotherapy that is dedicated to cancer patients. Research on the role of ACT in cancer suggests increased psychological flexibility through acceptance of unpleasant thoughts and feelings, reduced levels of distress, and improved mood and quality of life [31,32]. A study concerning the role of ACT in cancer [33], in the form of a case study of a prostate cancer patient undergoing HTH, indicates a beneficial effect of both ACT and MBCT (mindfulness-based cognitive therapy) on the patient's coping with fatigue, as well as his improved sleep quality and resiliency.

The limitation of the study is that it was conducted in a correlational paradigm and thus does not enable causal inference. Consequently, it would be useful to conduct a study incorporating psychotherapeutic/psychosocial interventions aimed at the cognitive appraisal of illness and the appraisal of changes in the level of acceptance of illness in prostate cancer patients. Another limitation is the small sample size of patients, so it would be advisable in the future to

study a larger group of patients treated for malignant prostate cancer to confirm the results obtained.

## Conclusions

1. The appraisal of illness as a challenge and obstacle/loss is the most common predictor of the acceptance of illness in prostate cancer patients.
2. A greater level of appraisal of illness as a challenge contributes to a greater level of acceptance of illness in patients.
3. A lower level of appraisal of illness as an obstacle/loss contributes to a greater level of acceptance of illness in prostate cancer patients.
4. Psychological interventions aimed at changing the cognitive appraisal of illness may increase the acceptance of illness in prostate cancer patients.

## Declaration of conflict of interests

The authors declare that there is no conflict of interests.

## Funding

None declared.

## References

1. Borówka A, Fijuth J, Potemski P. Rak gruczołu krokowego. In: Stelmach A, Potemski P. eds. Nowotwory układu moczowo-płciowego. In: Zalecenia postępowania diagnostyczno-terapeutycznego w nowotworach złośliwych 2021 rok. Polish Society of Clinical Oncology, 335–352. <https://ptok.pl/aktualne-zalecenia-i-standardy> (24 March 2022).
2. Kordek R, Sosnowski M, Potemski P. Rak gruczołu krokowego. In: Jassem J, Kordek R. ed. Onkologia. Podręcznik dla studentów i lekarzy. Via Medica, Gdańsk 2019: 262–267.
3. Didkowska J, Wojciechowska U, Olasek P, dos Santos FC, Michałek I. Nowotwory złośliwe w Polsce w 2019 roku. Polish National Cancer Registry, Maria Skłodowska-Curie National Research Institute of Oncology, Warsaw 2021.
4. The Global Cancer Observatory, 2020. <https://gco.iarc.fr/> (13 April 2022).

5. Cliff AM, MacDonagh RP. Psychosocial morbidity in prostate cancer: II. A comparison of patients and partners. *BJU Int.* 2000; 86(7): 834–839, doi: [10.1046/j.1464-410x.2000.00914.x](https://doi.org/10.1046/j.1464-410x.2000.00914.x), indexed in Pubmed: [11069410](https://pubmed.ncbi.nlm.nih.gov/11069410/).
6. Cherrier MM, Aubin S, Higano CS. Cognitive and mood changes in men undergoing intermittent combined androgen blockade for non-metastatic prostate cancer. *Psychooncology.* 2009; 18(3): 237–247, doi: [10.1002/pon.1401](https://doi.org/10.1002/pon.1401), indexed in Pubmed: [18636420](https://pubmed.ncbi.nlm.nih.gov/18636420/).
7. Roth AI, González-Restrepo A. Genitourinary Malignancies. In: Roth AI, González-Restrepo AG, Breitbart WS, Jacobsen PB, Loscalzo MJ, McCorkle R, Butow PN. ed. *Psycho-Oncology.* 3 ed. Oxford University Press, Oxford 2015: 114–120.
8. Wade J, Rosario DJ, Macefield RC, et al. Psychological impact of prostate biopsy: physical symptoms, anxiety, and depression. *J Clin Oncol.* 2013; 31(33): 4235–4241, doi: [10.1200/JCO.2012.45.4801](https://doi.org/10.1200/JCO.2012.45.4801), indexed in Pubmed: [24145343](https://pubmed.ncbi.nlm.nih.gov/24145343/).
9. Awsare NS, Green JSA, Aldwinckle B, et al. The measurement of psychological distress in men being investigated for the presence of prostate cancer. *Prostate Cancer Prostatic Dis.* 2008; 11(4): 384–389, doi: [10.1038/pcan.2008.21](https://doi.org/10.1038/pcan.2008.21), indexed in Pubmed: [18427569](https://pubmed.ncbi.nlm.nih.gov/18427569/).
10. Nelson C, Gilley J, Roth A. The impact of a cancer diagnosis on sexual health. In: Mulhall J. ed. *Cancer and Sexual Health.* Humana Press, New York 2011: 407–414.
11. Alsadius D, Olsson C, Pettersson N, et al. Perception of body odor – an overlooked consequence of long-term gastrointestinal and urinary symptoms after radiation therapy for prostate cancer. *J Cancer Surviv.* 2013; 7(4): 652–658, doi: [10.1007/s11764-013-0304-8](https://doi.org/10.1007/s11764-013-0304-8), indexed in Pubmed: [23975611](https://pubmed.ncbi.nlm.nih.gov/23975611/).
12. Kornblith AB, Herr HW, Ofman US, et al. Quality of life of patients with prostate cancer and their spouses. The value of a data base in clinical care. *Cancer.* 1994; 73(11): 2791–2802, doi: [10.1002/1097-0142\(19940601\)73:11<2791::aid-cn-cr2820731123>3.0.co;2-9](https://doi.org/10.1002/1097-0142(19940601)73:11<2791::aid-cn-cr2820731123>3.0.co;2-9), indexed in Pubmed: [8194021](https://pubmed.ncbi.nlm.nih.gov/8194021/).
13. Loprinzi CL, Sloan JA, Stearns V, et al. Newer antidepressants and gabapentin for hot flashes: An individual subject pooled analysis. *Journal of Clinical Oncology.* 2008; 26(Suppl. 15): 9537–9537, doi: [10.1200/jco.2008.26.15\\_suppl.9537](https://doi.org/10.1200/jco.2008.26.15_suppl.9537).
14. Roth AJ, Rosenfeld B, Kornblith AB, et al. The memorial anxiety scale for prostate cancer: validation of a new scale to measure anxiety in men with with prostate cancer. *Cancer.* 2003; 97(11): 2910–2918, doi: [10.1002/cncr.11386](https://doi.org/10.1002/cncr.11386), indexed in Pubmed: [12767107](https://pubmed.ncbi.nlm.nih.gov/12767107/).
15. Mehnert A, Lehmann C, Graefen M, et al. Depression, anxiety, post-traumatic stress disorder and health-related quality of life and its association with social support in ambulatory prostate cancer patients. *Eur J Cancer Care (Engl).* 2010; 19(6): 736–745, doi: [10.1111/j.1365-2354.2009.01117.x](https://doi.org/10.1111/j.1365-2354.2009.01117.x), indexed in Pubmed: [19832893](https://pubmed.ncbi.nlm.nih.gov/19832893/).
16. Christie KM, Meyerowitz BE, Giedzinska-Simons A, et al. Predictors of affect following treatment decision-making for prostate cancer: conversations, cognitive processing, and coping. *Psychooncology.* 2009; 18(5): 508–514, doi: [10.1002/pon.1420](https://doi.org/10.1002/pon.1420), indexed in Pubmed: [18756584](https://pubmed.ncbi.nlm.nih.gov/18756584/).
17. Wolanin A. Selected Variables Related To The Quality Of Life In Cancer. *Humanities and Social Sciences quarterly.* 2021; 28(2): 101–112, doi: [10.7862/rz.2021.hss.18](https://doi.org/10.7862/rz.2021.hss.18).
18. Janowski K, Steuden S, Kuryłowicz J, Niespiałowska-Steuden M. The Disease-Related Appraisals Scale. A tool to measure subjective perception of the disease situation. In: Janowski K, Steuden S. ed. *Biopsychosocial aspects of health and disease* Vol. 1. Centrum Psychoedukacji i Pomocy Psychologicznej, Lublin 2009: 108–125.
19. Lazarus RS, Folkman S. *Stress, Appraisal and Coping.* Springer, New York 1984.
20. McCrae RR. Situational determinants of coping responses: loss, threat, and challenge. *J Pers Soc Psychol.* 1984; 46(4): 919–928, doi: [10.1037//0022-3514.46.4.919](https://doi.org/10.1037//0022-3514.46.4.919), indexed in Pubmed: [6737200](https://pubmed.ncbi.nlm.nih.gov/6737200/).
21. Bjorck J, Hopp D, Jones L. Prostate Cancer and Emotional Functioning: Effects of mental adjustment, optimism, and appraisal. *Journal of Psychosocial Oncology.* 1999; 17(1): 71–85, doi: [10.1300/j077v17n01\\_05](https://doi.org/10.1300/j077v17n01_05).
22. Ahmad MM, Musil CM, Zauszniewski JA, et al. Prostate cancer: appraisal, coping, and health status. *J Gerontol Nurs.* 2005; 31(10): 34–43, doi: [10.3928/0098-9134-20051001-08](https://doi.org/10.3928/0098-9134-20051001-08), indexed in Pubmed: [16262089](https://pubmed.ncbi.nlm.nih.gov/16262089/).
23. Janowski K, Kurpas D, Kusz J, et al. Health-related behavior, profile of health locus of control and acceptance of illness in patients suffering from chronic somatic diseases. *PLoS One.* 2013; 8(5): e63920, doi: [10.1371/journal.pone.0063920](https://doi.org/10.1371/journal.pone.0063920), indexed in Pubmed: [23675516](https://pubmed.ncbi.nlm.nih.gov/23675516/).
24. Basińska MA, Kasprzak A. Związek między strategiami radzenia sobie ze stresem a akceptacją choroby w grupie osób chorych na łuszczycę. *Przegląd Dermatologiczny.* 2012; 99(6): 692–700.
25. Lipowski ZJ. Psychosocial reactions to physical illness. *Can Med Assoc J.* 1983; 128(9): 1069–1072, indexed in Pubmed: [6839255](https://pubmed.ncbi.nlm.nih.gov/6839255/).
26. Janowski K, Steuden S. *Skala Akceptacji Życia z Chorobą. Wersja eksperymentalna.* John Paul II Catholic University of Lublin, Lublin 2007.
27. Czerw AI, Religioni U, Deptała A, et al. Pain, acceptance of illness, adjustment to life with cancer and coping strategies in prostate cancer patients. *Arch Med Sci.* 2017; 13(6): 1459–1466, doi: [10.5114/aoms.2016.58458](https://doi.org/10.5114/aoms.2016.58458), indexed in Pubmed: [29181078](https://pubmed.ncbi.nlm.nih.gov/29181078/).
28. Watts S, Leydon G, Birch B, et al. Depression and anxiety in prostate cancer: a systematic review and meta-analysis of prevalence rates. *BMJ Open.* 2014; 4(3): e003901, doi: [10.1136/bmjopen-2013-003901](https://doi.org/10.1136/bmjopen-2013-003901), indexed in Pubmed: [24625637](https://pubmed.ncbi.nlm.nih.gov/24625637/).
29. Curtis R, Groarke A, Sullivan F. Stress and self-efficacy predict psychological adjustment at diagnosis of prostate cancer. *Sci Rep.* 2014; 4: 5569, doi: [10.1038/srep05569](https://doi.org/10.1038/srep05569), indexed in Pubmed: [24993798](https://pubmed.ncbi.nlm.nih.gov/24993798/).
30. Pascoe EC, Edvardsson D. Which coping strategies can predict beneficial feelings associated with prostate cancer? *J Clin Nurs.* 2016; 25(17-18): 2569–2578, doi: [10.1111/jocn.13300](https://doi.org/10.1111/jocn.13300), indexed in Pubmed: [27357548](https://pubmed.ncbi.nlm.nih.gov/27357548/).
31. Feros DL, Lane L, Ciarrochi J, et al. Acceptance and Commitment Therapy (ACT) for improving the lives of cancer patients: a preliminary study. *Psychooncology.* 2013; 22(2): 459–464, doi: [10.1002/pon.2083](https://doi.org/10.1002/pon.2083), indexed in Pubmed: [23382134](https://pubmed.ncbi.nlm.nih.gov/23382134/).
32. González-Fernández S, Fernández-Rodríguez C. Acceptance and Commitment Therapy in Cancer: Review of Applications and Findings. *Behav Med.* 2019; 45(3): 255–269, doi: [10.1080/08964289.2018.1452713](https://doi.org/10.1080/08964289.2018.1452713), indexed in Pubmed: [29558259](https://pubmed.ncbi.nlm.nih.gov/29558259/).
33. Pirnia B, Golshani G. Comparison of Mindfulness-Based Cognitive Therapy (MBCT) with Acceptance and Commitment Therapy (ACT) On the Severity of Fatigue, Improvement of Sleep Quality and Resilience in a Patient with Prostate Cancer: A Single-Case Experimental Study. *Int J Cancer Manage.* 2019; 12(2): e88416, doi: [10.5812/ijcm.88416](https://doi.org/10.5812/ijcm.88416).