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RESEARCH PAPER (ORIGINAL)

Quality of life of patients with prostate cancer

Qualidade de vida do doente portador de patologia oncológica da próstata
Calidad de vida de los pacientes con cáncer de próstata

Joana Margarida Pinheiro Teixeira[1]
https://orcid.org/0000-0001-7430-1488

Germano Rodrigues Couto[2]
https://orcid.org/0000-0002-5423-7375

Ana Paula Prata[3]
https://orcid.org/0000-0001-7552-9716

Pedro Lopes Ferreira[4]
https://orcid.org/0000-0002-9448-9542

[1] Instituto de Ciências Biomédicas Abel Salazar. Hospital Fernando Pessoa, Gondomar, Portugal

[2] Universidade Fernando Pessoa, Porto, Portugal

[3] Escola Superior de Enfermagem do Porto, Porto, Portugal

[4] Faculdade de Economia da Universidade de Coimbra, Coimbra, Portugal

Correspondence author:
Joana Margarida Pinheiro Teixeira
teixeirajoana85@gmail.com

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Abstract

Background: Prostate cancer is the second leading cause of death from cancer in men. Its diagnosis and treatment can significantly change their life and affect their quality of life.
Objective: To assess the changes in the quality of life of patients with prostate cancer, from diagnosis to the 6th month of treatment.
Methodology: A descriptive, analytical, and longitudinal study was conducted with prostate cancer patients, using HRQoL, SF-12, and EQ-5D scales in four moments.
Results: Changes were found in HRQoL dimensions across the four moments, as well as in functioning and symptoms.
Conclusion: This study provides new evidence on dimensions of HRQoL of patients with prostate cancer, namely emotional and social functions, fatigue, nausea and vomiting, insomnia, constipation and diarrhea symptoms, sexual activity, urinary, bowel symptoms, and hormonal treatment-related symptoms, from diagnosis to the 6th month of treatment. Health professionals should intervene in the most affected domains to improve the quality of life of prostate cancer patients.

Keywords: quality of life; prostatic neoplasms; patient reported outcome measures

Resumo

Enquadramento: O cancro da próstata é a segunda principal causa de morte por cancro nos homens. O diagnóstico e tratamento podem provocar alterações significativas na vida dos homens e, por consequência, modificar a sua qualidade de vida.
Objetivo: Avaliar as alterações na qualidade de vida do doente com patologia oncológica da próstata, desde o momento do diagnóstico da doença até aos 6 meses de tratamento.
Metodologia: Foi desenvolvido um estudo descritivo, analítico e longitudinal com a participação de doentes oncológicos, utilizando as escalas HRQoL, SF-12 e EQ-5D em quatro momentos.
Resultados: Foram observadas alterações em dimensões da QVRS ao longo de quatro momentos de avaliação, bem como ao nível da funcionalidade e dos sintomas.
Conclusão: Este estudo apresenta novas evidências sobre a QVRS dos doentes portadores de patologia oncológica da próstata, nomeadamente em dimensões relacionadas com funções emocionais e sociais, fadiga, náusea e vómito, insónia, sintomas de obstipação e diarreia, atividade sexual, sintomas urinários, intestinais e relacionados com o tratamento hormonal, desde o diagnóstico da doença aos 6 meses de tratamento. Uma intervenção dos profissionais de saúde direcionada para os domínios mais afetados pode proporcionar uma melhor qualidade de vida aos doentes.

Palavras-chave: qualidade de vida; neoplasias da próstata; medidas de resultados relatados pelo paciente

Resumen

Marco contextual: El cáncer de próstata es la segunda causa principal de muerte por cáncer en los hombres. Su diagnóstico y tratamiento puede causar cambios significativos en la vida de los hombres y, en consecuencia, alterar su calidad de vida.
Objetivo: Evaluar los cambios en la calidad de vida de los pacientes con cáncer de próstata, desde el diagnóstico de la enfermedad hasta el 6 mes de tratamiento.
Metodología: Se desarrolló un estudio descriptivo, analítico y longitudinal con la participación de pacientes oncológicos, para el cual se utilizaron las escalas HRQoL, SF-12 y EQ-5D en cuatro momentos.
Resultados: Cambios en las dimensiones de la HRQoL a lo largo de cuatro etapas de evaluación, y en el nivel de funcionamiento y de síntomas.
Conclusión: Este estudio aporta nuevas evidencias sobre la HRQoL de los pacientes con cáncer de próstata, concretamente sobre las dimensiones como funciones emocionales y sociales, la fatiga, las náuseas y los vómitos, el insomnio, los síntomas de estreñimiento y diarrea, la actividad sexual, los síntomas urinarios e intestinales y el tratamiento hormonal, desde el diagnóstico de la enfermedad hasta los 6 meses de tratamiento. La intervención de los profesionales de la salud orientada hacia los dominios más afectados puede garantizar a los pacientes una mejor calidad de vida.

Palabras clave: calidad de vida; neoplasias de la próstata; medición de resultados informados por el paciente

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Introduction

Prostate cancer represents 12% of all cancers in Europe. In developed countries, it is responsible for one out of every 10 deaths in men with cancer (Sequeira et al., 2015). More than one million cases are diagnosed every year, and mortality has increased to more than 300,000 deaths per year (Cooperberg & Chan, 2017). Prostate cancer is the second leading cause of death from cancer in men, only surpassed by lung cancer (Sequeira et al., 2015). Diagnosis and treatment of prostate cancer can lead to significant changes in men's lives and, consequently, alter their quality of life (QoL). It is a current topic whose high incidence and prevalence motivated the development of this study. The aim of this study was to assess the changes in the QoL of patients with prostate cancer, from diagnosis to the 6th month of treatment.

Background

Prostate cancer is the most common cancer in men over the age of 50 years, accounting for around 3.5% of all male deaths and 10% of all male deaths from cancer (Organisation for Economic Co-operation and Development, 2018; Sequeira et al., 2015). Both incidence and mortality vary across geographic regions and populations, reflecting the multifactorial impacts of genetic variation, diet, lifestyle, and environmental factors, access to health care, and variations in the use of prostate-specific antigen-based screening policies (Cooperberg & Chan, 2017). Prostate cancer is predominantly a disease of older men, that is, aged 70 years or more. According to the National Cancer Institute, the median age at diagnosis is 68 years and 71.2% of deaths due to prostate cancer occur in men aged 75 years or more. With the growing aging population and the increased average life expectancy in developed countries, cases of prostate cancer are expected to increase drastically in the future (Droz et al., 2010). As the population ages, there is an urgent need to develop a way for oncologists to characterize the *functional age* of elderly cancer patients to adapt treatment decisions and stratify outcomes based on factors other than chronological age and to develop interventions which optimize cancer treatment (Hurria, Lachs, Cohen, Muss, & Kornblith, 2006). Among older cancer patients, there is wide heterogeneity in the physical and psychological functioning of patients of the same chronological age. Aging is a highly individualized process and all changes involved in this process cannot be foreseen only based on chronological age. Some patients will tolerate chemotherapy as well as their younger peers, while others will suffer severe toxicity, requiring treatment reduction, delay or permanent discontinuation, and others may be in a situation where the best treatment option is not chemotherapy. Therefore, an important issue faced by oncologists when treating older cancer patients is to select the most adequate treatment for each patient (Pallis, Wedding, Lacombe, Soubeyran, & Wildiers, 2010). Specific health-related quality of life (HRQoL) assessment tools, particularly for older adults, have been developed to identify the symptoms and needs of specific groups. The longitudinal changes in physical function, symptom burden, and QoL of patients may foster the development of an interdisciplinary, patient-centered intervention (Sequeira et al., 2015; Wallwiener et al., 2017). The World Health Organization defines QoL "as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (World Health Organization, 2019, p. 1). This research was developed keeping in mind the need to assess the HRQoL of patients with prostate cancer and identify the most affected QoL domains.

Research question

What are the changes in the quality of life of patients with prostate cancer, from diagnosis to the 6th month of treatment?

Methodology

A descriptive, analytical, and longitudinal study was conducted with cancer patients from an oncology hospital unit in the North of Portugal. The nonprobability, convenience sample was composed of 60 outpatients who attended follow-up nursing visits visits between October 2015 and July 2016. The following inclusion criteria were applied: patients aged over 18 years with prostate cancer who accepted to participate in the study. Patients who were unable to read and write in Portuguese and patients with neurological and cognitive disorders who were unable to fill in the questionnaire were excluded from the study. Generic and specific HRQoL scales for cancer were used. Out of those specifically created for cancer patients, the EORTC QLQ-C30 was used. This questionnaire measures the following dimensions: (i) Global health status/QoL; (ii) Functional status, including physical functioning, role functioning, emotional functioning, cognitive functioning, and social functioning; and (iii) Symptoms, including fatigue, nausea and vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties (Fayers et al., 2001; Ferreira, 1997). The EORTC QLQ-Prostate Cancer module (EORTC QLQ-PR25) was also applied. It includes functioning scales (sexual activity and sexual functioning) and symptom scales (urinary symptoms, bowel symptoms, and hormonal treatment-related symptoms, as well as an item to assess the use of an incontinence aid; van Andel et al., 2008). The scores of both EORTC scales vary between 0 and 100. For the functioning scales and the global QoL scale, higher scores reflect higher levels of functioning or global QoL. In the symptom scales, higher scores reflect more problems, that is, lower QoL. The instruments were self-administered after the researcher provided contextual information.

Regarding the generic health status and QoL tools, SF-12 essentially measures physical and mental dimensions of health using summary scores (Ferreira, 2000a; Ferreira, 2000b). EQ-5D is also a generic tool for assessing the value that an individual assigns to his or her health status in the following dimensions: (i) Mobility, (ii) Self-care, (iii) Usual activities, (iv) Pain/discomfort, and (v) Anxiety/depression (Herdman et al., 2011). These scores are rated on a 0-100 scale, respectively representing tthe worst and best imaginable health status.

Data were collected in four moments, corresponding to the follow-up nursing visits. In order to identify the HRQoL changes, data were collected in the moments established by the institution for patient follow-up: the first post-diagnosis visit (M0), and at 1 month (M1), 3 months (M2), and 6 months (M3) after the beginning of treatment.

Data were analyzed using IBM SPSS® Statistics, version 25.0 for Windows. Descriptive statistics were used to describe the sample and to compute the mean scores for each measure, taking into account the four moments of assessment. These scores were compared through an ANOVA with a Scheffé post-hoc test.

Throughout this study, all ethical-legal considerations were observed. It should be noted that all the subjects participated on a voluntary basis and signed an informed consent form. This research obtained the favorable opinion of the Board of Directors of the institution and of the Ethics Committee (Opinion no. 107/014).

Results

Table 1 highlights the characteristics of the sample used in this study. The mean age was 69.9 years, varying between a minimum of 51 years and a maximum of 90 years. The age group 65-74 years includes 36.7% of the patients, most of them with less than 12th-grade education (53.3%) and retired (53.3%).

Table 1
Descriptive statistics: sample characterization (n = 60)

Variable	Value	*N*	%
Age	45 to 54	3	
	55 to 64	17	5.0%
	65 to 74	22	28.3%
	75 to 84	11	36.7%
	85+	7	18.3%
	Mean ± *SD*	69.9 ± 9.8	11.7%
	Min - Max	51 - 90	
Academic qualifications	No formal qualifications	12	20.0%
	≤ 12th grade	32	53.3%
	Higher education	16	26.7%
Occupation	Employed	27	45.0%
	Retired	32	53.3%
	Unemployed	1	1.7%
Marital status	Single	5	8.3
	Married	41	68.3
	Divorced	4	6.7
	Widowed	10	16.7
Type of treatment	Surgical	18	30.0
	Non-surgical	27	45.0
	Surgical and non-surgical	15	25.0

Note. SD = standart deviation.

As for the type of treatment, 45% of the patients did not undergo any surgical treatment, that is, no chemotherapy and/or radiotherapy and/or brachytherapy and/or hormonotherapy, and 30% underwent surgery.

Table 2 shows the HRQoL changes reported by the participants over time for each domain of the QLQ-C30 instruments and the QLQ-PR25 module. The signs =, ↗ and ↘ respectively represent no significant difference, an increase, and a decrease of the mean scores across the four moments of assessment.

Table 2
Inferential statistics: changes in the QoL scores

	M0		M1		M2		M3
	M ± *SD*		*M* ± *SD*		*M* ± *SD*		*M* ± *SD*
EORTC QLQ-C30: Global health status							
Quality of Life	54.7 ± 16.9	=	53.3 ± 17.2	=	56.5 ± 17.4	=	54.3 ± 18.6
EORTC QLQ-C30: Functioning scales							
Physical functioning	85.8 ± 17.9	=	84.3 ± 19.0	=	87.2 ± 18.8	=	85.0 ± 20.0
Role functioning	83.3 ± 21.3	=	81.7 ± 22.1	=	87.8 ± 20.3	=	86.7 ± 20.5
Emotional functioning	74.9 ± 20.3	=	72.4 ± 20.2	↗	81.9 ± 20.9	↗	90.7 ± 14.5
Cognitive functioning	89.2 ± 16.5	=	86.1 ± 17.9	=	91.4 ± 16.4	=	89.4 ± 19.9
Social functioning	83.6 ± 22.9	=	78.3 ± 26.5	↗	89.2 ± 20.3	=	90.3 ± 23.4
EORTC QLQ-C30: Symptom scales							
Fatigue	21.5 ± 18.7	=	23.9 ± 19.1	↘	15.2 ± 17.8	=	11.5 ± 17.2
Nausea and vomiting	13.1 ± 16.6	=	15.3 ± 16.9	↘	9.2 ± 15.2	=	5.6 ± 11.3
Pain	66.7 ± 18.4	=	65.3 ± 19.0	=	63.3 ± 18.1	↘	56.1 ± 15.9
Dyspnea	4.4 ± 11.4	=	6.1 ± 13.0	=	4.4 ± 11.4	=	5.0 ± 12.0
Insomnia	24.4 ± 23.7	=	28.3 ± 25.2	↘	17.2 ± 22.5	↘	7.8 ± 18.8
Appetite loss	21.7 ± 22.0	=	22.2 ± 21.8	=	15.6 ± 21.7	↘	6.1 ± 13.0
Constipation	16.1 ± 22.5	=	21.1 ± 26.0	↘	10.6 ± 19.9	=	9.4 ± 23.0
Diarrhea	16.7 ± 23.4	=	22.2 ± 27.2	↘	11.1 ± 21.0	=	10.0 ± 24.0
Financial difficulties	14.4 ± 24.8	=	14.4 ± 24.8	=	7.2 ± 17.5	↘	1.1 ± 6.0
EORTC QLQ-PR25: Functioning							
Sexual functioning	34.3 ± 20.5	=	30.3 ± 16.8	=	26.6 ± 18.3	=	22.5 ± 14.7
Sexual activity	78.2 ± 23.5	=	78.8 ± 22.7	↗	90.4 ± 18.0	=	94.7 ± 11.6
EORTC QLQ-PR25: Symptoms							
Urinary symptoms	16.6 ± 18.4	=	21.8 ± 20.9	↘	12.2 ± 17.5	=	12.2 ± 21.1
Bowel symptoms	3.1 ± 6.5	=	5.3 ± 13.2	↘	2.1 ± 5.9	=	2.2 ± 12.1
Hormonal treatment	3.5 ± 6.3	=	6.3 ± 9.7	↘	2.1 ± 5.4	=	1.9 ± 7.7
Incontinence aid	44.4 ± 40.4	=	66.7 ± 29.8	=	44.4 ± 34.4	=	55.6 ± 40.4

Note. M±SD = mean±standard deviation; = no significant difference; ↗ increase in functioning; ↘ reduction of symptoms.

First, it should be noted that no significant differences were observed in functioning and symptoms between M0 and M1, either using generic or specific prostate cancer measurement instruments. Although QLQ-C30 revealed no significant differences across the four moments, some differences were found regarding functional status and symptoms. In fact, after a slight reduction between M0 and M1, the emotional dimension increased significantly between M1 and M3 ($p = 0.030$) and between M2 and M3 ($p = 0.016$). In addition, the social dimension increased between M1 and M2 ($p = 0.015$), although with a statistically significant difference.

Regarding the symptoms, significant differences were found in fatigue ($p = 0.014$), nausea and vomiting ($p = 0.031$), insomnia ($p = 0.028$), constipation ($p = 0.017$), and diarrhea ($p = 0.014$) between M1 and M2. On the other hand, pain ($p = 0.021$) and other symptoms such as insomnia ($p = 0.026$) and appetite loss ($p = 0.007$) showed a significant decrease between M1 and M2. The decrease of financial difficulties ($p = 0.015$) was also significant between M2 and M3.

In the QLQ-PR25 module, between M1 and M2, sexual activity increased significantly ($p < 0.001$), whereas the urinary ($p = 0.002$), bowel ($p = 0.05$) and hormonal treatment-related symptoms ($p = 0.001$) decreased. No significant differences were observed between M2 and M3.

In SF-12, a significant difference was found in the mental dimension between M1 and M2 ($p = 0.042$) and between M2 and M3 ($p = 0.028$), as shown in Table 3.

Table 3
Evolution of the health status and quality of life scores

	M0		M1		M2		M3
	M ± SD		M ± SD		M ± SD		M ± SD
SF-12v2							
Physical dimension	47.8 ± 8.5	=	47.9 ± 8.2	=	48.1 ± 8.4	=	48.1 ± 7.7
Mental dimension	47.5 ± 10.2	=	47.2 ± 9.7	↗	51.3 ± 10.5	↗	55.2 ± 7.6
EQ-5D							
Summary Index	94.4 ± 17.2	=	93.8 ± 18.1	=	95.2 ± 16.0	=	96.7 ± 12.9
Visual Analogue Scale	57.0 ± 18.2	=	53.4 ± 17.0	=	58.0 ± 19.4	=	55.7 ± 17.0

Note. M ± SD = mean±standard deviation; = no significant difference; ↗ increase in functioning.

Finally, the measurement of the perceived quality of life using the EQ-5D-5L, in line with the quality of life dimension of the EORTC QLQ-C30, did not show any significant change across the several assessment moments. It should be noted that the instruments were tested for their internal validity and reliability and obtained a very good internal consistency (Cronbach alpha > 0.9).

Discussion

The age group of this sample was 51 to 60 years, with a higher frequency of the age group 61 to 74 years (36.7%) and a mean of 69.9 years, which is in line with the literature that shows that most prostate cancer diagnoses occur after age 65 (Quijada, Fernandes, Oliveira, & Santos, 2017).

With regard to marital status, 68.3% of patients were married; it should be noted that married patients scored higher in some domains, namely physical and social domains (Kao et al., 2015). Concerning other determinants, 53.3% of the patients had less than 12th-grade education. According to Statistics Portugal, in 2018, 21.9% of the Portuguese population had completed 12 years of education, which is less than the years found in this study. In this sample, 53.3% of the patients were retired. In 2017, 41% of the Portuguese population was retired, values lower than those found in this study (Instituto Nacional de Estatística, 2019).

The analysis of the evolution of the global health status considering the different assessment moments shows that the best scores were found between M1 and M2, especially due to the increase in emotional and social functioning and the decrease in fatigue, nausea and vomiting, insomnia, constipation, and diarrhea symptoms. The decrease of pain, insomnia, appetite loss, and financial difficulties was also evident between M2 and M3. These results were also confirmed by other studies (Cooperberg & Chan, 2017; Sequeira et al., 2015) which showed that, in the first 6 months after surgery, the social, physical, and sexual domains had the worst results, with the best results emerging between the sixth and twelfth month after surgery. On the other hand, pain, diarrhea, financial difficulties, fatigue, and insomnia were found to be important factors associated with HRQoL changes in a prostate cancer study (Torvinen et al., 2013). Fatigue, pain, and insomnia were also reported as factors leading to changes (Sequeira et al., 2015).

Between M1 and M3, there was a significant increase in sexual activity functioning and a significant decrease in urinary, bowel, and hormonal treatment-related symptoms. Chien et al. (2017) also found that urinary incontinence was worse in the first months after surgery. This same study mentions that the quality of life of surgery patients suffered a major impact in M3, which is different from the results found in this sample where the worst impact was found between M1 and M2.

On the other hand, a literature review revealed that men with prostate cancer show HRQoL changes, especially urinary problems (Eton & Lepore, 2002). Regarding sexual functioning and the lack of statistically significant changes throughout the period under analysis, privacy maintenance issues may be considered, as stated by Sequeira et al. (2015). Chien et al. (2017) found changes in sexual functioning regardless of the type of treatment, with sexual functioning decreasing in the first 24 months, particularly in the first months after surgery. However, the decline found in the present study was not significant. This study reinforces the importance of health professionals to assess quality of life as part of the clinical routine to identify the affected dimensions, something that is not currently done in Portuguese hospitals. In this way, care can be personalized and, not less importantly, health can act as an anchor in the clinical decision process.

Conclusion

This study provides new evidence on the HRQoL of patients with prostate cancer, namely on Emotional and Social functioning, Fatigue, Nausea and vomiting, Insomnia, Constipation, and Diarrhea symptoms, Sexual activity, Urinary, Bowel, and Hormonal treatment-related symptoms, from diagnosis to the sixth month of treatment. These results suggest the importance of implementing HRQoL assessment as part of the clinical routine with a view to identifying the most affected QoL domains to be addressed by healthcare professionals, namely nurses as they are more present during hospitalization, using a patient-centered approach. An intervention focused on the most affected domains can improve the patients' quality of life.

The methodology used in this study allowed identifying factors that would have been missed using other data collection strategies. This study has some limitations, namely regarding sample size. If the sample was larger, the results may have been more robust in some QoL domains. On the other hand, data collection was a complex process due to questionnaire size and the institutions' dynamics, which resulted in the loss of some eligible patients.

Nevertheless, the measurement scales proved to be adequate tools for further exploring the phenomenon under analysis. However, it would be important to develop simple tools requiring less time and resources to regularly monitor HRQoL, not only in these moments but also throughout the follow-up process of cancer patients. Future longitudinal studies should be conducted to monitor the HRQoL of these patients.

Author contribution

Conceptualization: Teixeira, J. M.
Formal analysis: Teixeira, J. M., Couto, G. R., Prata, A. P., Ferreira, P. L.
Methodology: Teixeira, J. M.
Investigation: Teixeira, J. M., Couto, G. R., Prata, A. P., Ferreira, P. L.
Writing – original draft preparation: Couto, G. R., Teixeira, J. M., Prata, A. P., Ferreira, P. L.
Writing – review & editing: Couto, G. R., Teixeira, J. M., Prata, A. P., Ferreira, P. L.
Supervision: Teixeira, J. M., Couto, G. R., Prata, A. P., Ferreira, P. L.

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