European Review for Medical and Pharmacological Sciences 2016; 20: 2773-2778

Adaptation and validation of an Italian version of the Prostate Cancer Specific Quality of Life Instrument (PROSQOLI)

L. BELLARDITA[1], R. DAMIANO[2], F. PORPIGLIA[3], V. SCATTONI[4], A. AMODEO[5], R. BORTOLUS[6], A. LAPINI[7], A. COCCI[7], V. CICALESE[8], M. CAPONERA[9], P. MASTRANGELO[10], F. FRANCESCA[11], R. VALDAGNI[12], G. TAVERNA[13], D. DI TRAPANI[14], R. LEONARDI[15], D. MINOCCI[16], F. GABOARDI[17], E. MONTANARI[18], G. CONTI[19]

[1]Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy
[2]Department of Urology, Magna Graecia University of Catanzaro, Catanzaro, Italy
[3]Urology, San Luigi Hospital, Regione Gonzole 10, Orbassano, Turin, Italy
[4]Department of Urology, University Vita-Salute, Scientific Institute San Raffaele, Milan, Italy
[5]Urology, Ospedale civile di Castelfranco Veneto, Asolo, Treviso, Italy
[6]Radiation Oncology Department, National Cancer Institute, Aviano, Italy
[7]Department of Urology, Universital Hospital Careggi, Florence, Italy
[8]Urology, Azienda Ospedaliera "S. Giuseppe Moscati", Avellino, Italy
[9]Divisione di Urologia, Ospedale Civile, Anagni, Frosinone, Italy
[10]Urology Department, IRCCS-CROB, Rionero in Vulture, Potenza, Italy
[11]UO Urologia II, Azienda Ospedaliero-Universitaria Pisa, University of Pisa, Pisa, Italy
[12]Radiotherapy, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy
[13]Department of Urology, Humanitas Mater Domini, Castellanza, Varese, Italy
[14]U.O.C. di Urologia e Andrologia, Ospedale Buccheri La Ferla, Palermo, Italy
[15]Urology, Centro Uro-Andrologico La Cura, Acireale, Catania, Italy
[16]Urology, ASL VCO Regione Piemonte, Italy
[17]Urology Department, IRCCS San Raffaele Scientific Institute, Ville Turro Division, Milan, Italy
[18]Urology, San Paolo Hospital, Milan, Italy
[19]Department of Urology, Sant'Anna Hospital, Como, Italy

Abstract. – OBJECTIVE: The Prostate Cancer Specific Quality of Life Instrument (PROSQOLI) is a measure of health-related quality of life (HRQoL) in advanced hormone-resistant prostate cancer. In this study, we aimed at performing a cross-cultural adaptation and validation of the Italian version of the PROSQOLI.

PATIENTS AND METHODS: The original version of the PROSQOLI underwent several turnarounds of translations. A total of 472 patients treated with radical prostatectomy, radiotherapy or medical therapy were enrolled for the validation of the questionnaire.

The PROSQOLI was administered together with the SF-12. Reliability indexes were calculated by using Cronbach alpha. To evaluate the validity of the construct, relationships between PROSQOLI and SF12 were assessed.

The ANOVA test was used to evaluate the differences between groups of patients who had received different treatments.

RESULTS: The reliability coefficient was 0.91. Item-to-total correlation indices were in most cases >0.70. The correlation between the scores of the PROSQOLI and those of the SF-12 questionnaire was high (r=0.8139, $p<0.0001$). The ANOVA test showed significant differences between groups ($p<0.01$) based on age, recurrence risk and treatment.

CONCLUSIONS: The adaptation process showed that the PROSQOLI Italian version has high reliability and presents both convergent and discriminant validity. This version of the tool can be used to assess HRQoL in Italian men who underwent radical treatment for advanced prostate cancer.

Key Words: Prostate cancer, Health-related quality of life, Patient-reported outcomes, Cross-cultural adaptation.

Introduction

Prostate cancer (PCa) is one of the most commonly diagnosed tumors representing about 20% of

Corresponding Author: Lara Bellardita, Psy.D, Ph.D; e-mail: Lara.belladita@istitutotumori.mi.it

all newly-diagnosed cancers[1]. Between 1990 and 2002, the incidence of PCa increased in major European Countries (Germany, France, UK, Italy and Spain), likely as a result of the widespread use of Prostatic-Specific Antigen (PSA) testing and the rising age of the general population. Italy and Spain presented the greatest proportional increase in PCa incidence (141% and 138%, respectively)[2-4]. Both life duration and quality of life should be considered when patients are treated for PCa, since current treatment strategies – surgery, radiotherapy, androgen deprivation therapy and chemotherapy – may all be associated with side effects including urinary, sexual and bowel dysfunctions, hot flashes, decreased sexual desire, and loss of bone density[5-8]. Therefore, patients' self-reported health-related quality of life (HRQOL) represents an increasingly-important clinical endpoint in the management of patients with PCa[9-11].

Several assessments tools have been developed to specifically evaluate HRQoL in men with PCa[12,13]; however, they are often not suitable for use in clinical practice, particularly for elderly and patients with severe comorbid conditions.

The Prostate Cancer Specific Quality of Life Instrument (PROSQOLI) is a tool originally developed as an outcome measure for clinical trials in advanced hormone-resistant PCa to assess HRQOL[14,15]. The tool was adapted for use in other languages and cultures[16,17], but not in Italy. This study aimed at validating the PROSQOLI questionnaire for future use in Italy, in both in clinical practice and the experimental setting.

Patients and Methods

Instruments

The PROSQOLI consists of 10 items assessing the physical limitations in the perceived health status of the patient (pain, physical activity, fatigue, appetite, urinary problems, and constipation), their emotional state, their ability to enjoy social relations and overall health (see[14] for a complete description of this tool). It is structured in 9 linear analog self-assessment scales (LASA). A 6-point adjectival ordinal scale that assesses the current intensity of pain is taken from the McGill Pain Questionnaire[18].

The English version of the PROSQOLI was translated into Italian and then back translation was performed. The Italian version was evaluated by a panel of specialists, including physicians and psychologists, and by a panel of 10 patients recruited through an advocacy association. Minor changes were implemented in the Italian version, mostly consisting of a more straightforward wording in a few items.

In order to assess convergent validity, the 12-Item Short-Form Health Survey (SF-12) was used[19,20].

Study Design

An observational, cross-sectional, multicenter study was conducted in 21 centers in Italy selected on the basis of the density of the population in the concerned geographic area. The study was approved by the Ethical Committee of each Hospital and patients signed an informed consent before inclusion.

Patients with a diagnosis of locally-advanced or advanced prostate carcinoma (TNM: T3-T4, N0-N1, Nx-N0, M0-M1) were included. Exclusion criteria were as follows: (i) inability to understand the information given about the study, read and complete the questionnaires, and give written informed consent; (ii) non-PCa related severe medical conditions.

The patients were enrolled during a routine follow-up visit at their reference center. The participants were asked to fill in the PROSQOLI and SF-12 questionnaires and to record the time needed to complete them.

The physician recorded, in a Clinical Report Form, patient's socio-demographic and clinical data (duration of disease, urinary symptoms, digital rectal examination results, PSA values and nadir, TNM staging, Gleason score, treatment details – prostatectomy, radiotherapy, medical therapy type and related relevant details) as well as pain medication intake in the previous 24 hours.

Data Analysis

Descriptive analyses were performed to assess the percentage of unanswered items, as well as ceiling and floor effect for each item and for the entire questionnaire. Reliability was assessed by calculating Cronbach's alpha coefficient. Item-to-total correlation and the exploratory factor analysis of the responses to the individual items of the questionnaire were performed to evaluate content validity. Correlations between the PROSQOLI and SF-12 scores were estimated to assess convergent validity. Discriminant validity was estimated by using correlations between the scores of the PROSQOLI and clinical variables.

The total sample was divided into three subsets based on primary treatment (prostatectomy, radiation

therapy, medical therapy). Comparisons of the average scores of the PROSQOLI questionnaire were performed for the three groups using ANOVA (Analysis of Variance), with post-hoc Bonferroni's correction, or Kruskal-Wallis (non-parametric equivalent), as appropriate. A p-value <0.05 was considered statistically significant.

Data analyses were conducted by using BMDP (BioMedical Data Program) version 8.1.

Results

The final analysis included 472 participants. The mean age of the subjects was 73.5 years (SD=7.9). Mean time since diagnosis was 47 months (SD=45.4, median=32). The mean PSA value before treatment was 37 ng/ml (SD=104.4, median=9.8). The most frequent clinical cancer stages reported were: T3N0M0 (14.2%) and T3NXMX (12.3%).

At study enrollment, 62% of patients were treated with LHRH analogues, and 23% with antiandrogens; 12% of participants had taken analgesics in the prior 24 hours. Table 1 reports sample demographic and clinical characteristics.

None of the participants returned an unfilled questionnaire. Mean time to fill in the questionnaire was 316 seconds (approximately 5 minutes). In 7 out

Table I. Descriptive of sample demographic and clinical characteristics.

	N (%)	
Education	Primary school	188 (39.8)
	Junior high school	128 (27.1)
	High school	116 (24.6)
	University degree	37 (7.8)
	Missing	3 (0.6)
Primary treatment	Prostatectomy	251 (53.2)
	Radiotherapy	58 (12.3)
	Medical therapy	163 (34.5)
	Missing	0 (0.0)
Presence of urinary symptoms	No	230 (48.7)
	Yes	239 (50.6)
	Missing	3 (0.6)
Neoadjuvant hormone therapy	No	234 (93.2)
	Yes	17 (6.8)
	Missing	0 (0.0)
Biochemical relapse	No	141 (56.2)
	Yes	110 (43.8)
	Missing	0 (0.0)

Table I. Descriptive of sample demographic and clinical characteristics.

	n.	Missing	Mean	SD	1st Quartile	Median	3rd Quartile	Possible	IC. 95%	Floor effect (n/%)	Ceiling effect
Item 1 – pain	470	2	78.9	23.8	72	88.5	96	0-100	76.8,81.1	0/0.0	52/11.0
Item 2 – exercise	467	5	75.8	23.8	65	83	95	0-100	73.6,77.9	0/0.0	30/6.4
Item 3 – fatigue	471	1	65.1	27.1	48	72	86	0-100	62.6,67.5	2/0.04	17/3.6
Item 4 – appetite	468	4	81.9	20.3	75	89	96.5	0-100	80,83.7	0/0.0	51/10.8
Item 5 – constipation	471	1	72.4	27.5	57	83	95	0-100	69.9,74.9	3/0.6	45/9.5
Item 6 – urinary problems	470	2	65.7	26.7	49	72	89	0-100	63.3,68.2	5/1.1	24/5.1
Item 7 – pleasure in time with family	470	2	76.4	23.6	67	84	94	0-100	74.3,78.6	1/0.2	38/8.1
Item 8 – mood	472	0	73.1	24.2	63	80	92	0-100	70.9,75.3	2/0.4	37/7.8
Item 9 – health state	459	13	73.2	22.2	62	78	91	0-100	71.1,75.2	0/0.0	21/4.4
Item 10 – pain intensity	433	39	740.8	178	649	778	873	0-1680	724,757.6	1/0.2	211/44.7

of 10 items, the number of missing answers was less than 1% and in the other + cases it was less than 3%. Table II reports score distribution and ranges, the percentage of missing responses, and floor and ceiling effect for each item of the PROSQOLI.

Exploratory factor analysis showed that 56% of the total variability could be due only to one factor. The internal consistency Cronbach's alpha coefficient was 0.91. Item-to-total correlation indices were in most cases >0.70. The correlation of the various items with the factor extract through the analysis (sorted by the rotated factor loadings) showed that 8 out of 10 items had a correlation degree > 0.70; for the remaining two items, the correlation degree was >0.50.

The correlation coefficients between the scores of the PROSQOLI questionnaire and those of the SF-12 were high (r=0.8139, $p<0.0001$).

The results of the ANOVA showed significant differences between groups ($p<0.01$). Figure 1 reports PROSQOLI scores by item for each treatment strategy.

The overall sample was analyzed according to recurrence risk categories (as described by the NCCN guidelines v.1.2010)[21], age, and treatment strategy (Figure 2). ANOVA showed significant differences between groups (all $p<0.01$), thus lending support to the discriminant ability of the questionnaire.

Discussion

The cultural adaptation of the Italian PROSQOLI version was successfully performed and a sound version was obtained showing good acceptability, reliability, construct and discriminant validity.

The aim of the researchers who developed the original version was to create a tool that could be easily and repeatedly administered to elderly patients, often on substantial doses of narcotic analgesics and potentially presenting with language and intellectual limitations. Lengthy and complex tools are not suitable in a clinical context due to both physicians' time/resources constraints and patients' health status and motivation[13,17]. The adapted version of PROSQOLI resulted as an effective instrument for assessing HRQoL in men with advanced prostate cancer in Italy.

An important consideration arising from the analysis of the results of the study is related to the time needed for the completion. The average time to fill in the questionnaire was 316 seconds; this time seems too long in particular if compared to the average time taken in Spain (109 seconds). This result could be due to the fact that the majority of patients had a low level of education[22]. This issue is relevant given that that the questionnaire was developed to reduce the time needed for completion of other questionnaires used to evaluate HRQoL in this setting.

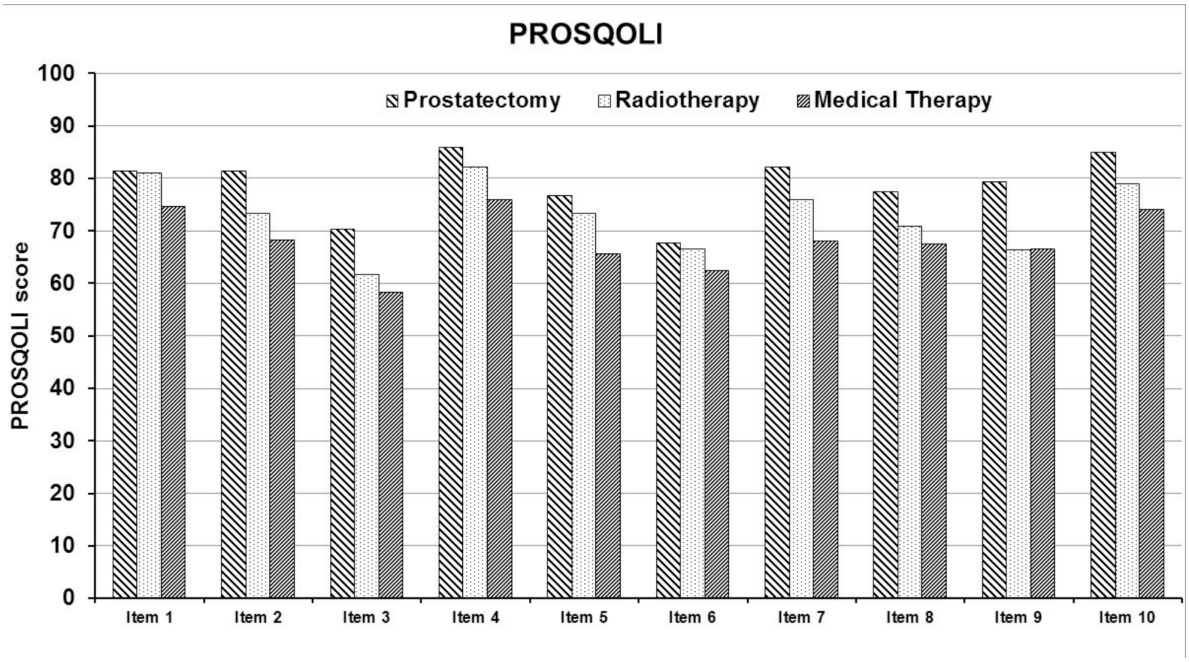

Figure 1. PROSQOLI scores by item for each treatment strategy. $p<0.01$ for all intra-item comparisons (with the exception of Item 1, prostatectomy vs radiotherapy).

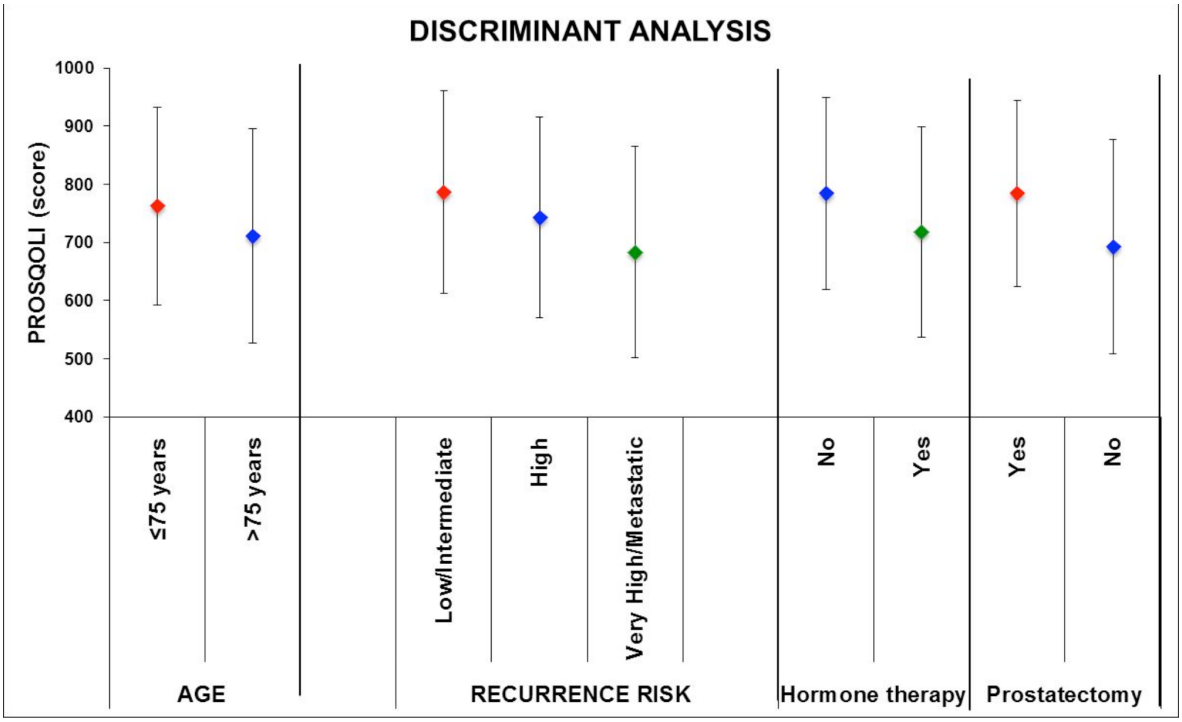

Figure 2. Analysis according to recurrence risk categories[21], age, and treatment strategy. The Y axis is reported on a 1000-point scale for the sake of clarity. $p<0.01$ for all comparisons.

The reliability of the Italian version of PROSQOLI was high. Unfortunately, the reliability coefficients of the original English version were never reported; therefore, a comparison is not feasible. Nonetheless, in our study, the reliability index was very close to the findings reported in the Spanish validation (Cronbach's alpha = .94)[16]. Moreover, from a statistical point of view, the lack of homogeneity between the original and Italian populations may be misleading when comparing the psychometric characteristics of the two questionnaires. In fact, the population of this study (locally-advanced or advanced prostate cancer) is slightly different from the population used in the original study (hormone resistant/castration resistant and symptomatic disseminated prostate cancer).

Conclusions

In short, the results of the study show the reliability and validity of the Italian translation of the PROSQOLI questionnaire, supporting its use as a measure of the quality of life in patients with prostate cancer. This tool may find its application in both clinical practice and national clinical trials.

Acknowledgement

The Authors have no conflicts of interest directly relevant to this study. The authors would like to acknowledge the patients who participated in the study; the urologists, radiation oncologists and medical oncologists for their collaboration in data collection and the statisticians for data analysis. The study was funded with a research grant from Ipsen Pharma Inc Laboratories. Editorial assistance for the preparation of this manuscript was provided by Luca Giacomelli, Ph.D, on behalf of Content Ed Net; this assistance was funded by Ipsen.

Conflicts of interest

The authors declare no conflicts of interest.

References

1) Parkin DM, Bray F, Ferlay J, Pisani P. Estimating the world cancer burden: Globocan 2000. Int J Cancer 2001; 94: 153-156.
2) Bracarda S, de Cobelli O, Greco C, Prayer-Galetti T, Valdagni R, Gatta G, de Braud F, Bartsch G. Cancer of the prostate. Crit Rev Oncol Hematol 2005; 56: 379-396.
3) Rossi S, Crocetti E, Capocaccia R, Gatta G; AIRTUM Working Group. Estimates of cancer burden in Italy. Tumori 2013; 99: 416-424.

4) Incidenza dei tumori in Italia: rapporto 2006 MIAMOD Istituto Superiore di Sanità. E&P 30 Gennaio-Febbraio 2006; Supplemento 2: 105-106.
5) Matthew AG, Alibhai SM, Davidson T, Currie KL, Jiang H, Krahn M, Fleshner NE, Kalnin R, Louis AS, Davison BJ, Trachtenberg J. Health-related quality of life following radical prostatectomy: long-term outcomes. Qual Life Res 2014; 23: 2309-2317.
6) Singh J, Trabulsi EJ, Gomella LG. The quality-of-life impact of prostate cancer treatments. Curr Urol Rep 2010; 11: 139-146.
7) Sullivan PW, Mulani PM, Fishman M, Sleep D. Quality of life findings from a multicenter, multinational, observational study of patients with metastatic hormone-refractory prostate cancer. Qual Life Res 2007; 16: 571-575.
8) Dacal K, Sereika SM, Greenspan SL. Quality of life in prostate cancer patients taking androgen deprivation therapy. J Am Geriatr Soc 2006; 54: 85-90.
9) Sadetsky N, Hubbard A, Carroll PR, Satariano W. Predictive value of serial measurements of quality of life on all-cause mortality in prostate cancer patients: data from CaPSURE (cancer of the prostate strategic urologic research endeavor) database. Qual Life Res 2009; 18: 1019-1027.
10) Sanda MG, Dunn RL, Michalski J, Sandler HM, Northouse L, Hembroff L, Lin X, Greenfield TK, Litwin MS, Saigal CS, Mahadevan A, Klein E, Kibel A, Pisters LL, Kuban D, Kaplan I, Wood D, Ciezki J, Shah N, Wei JT. Quality of life and satisfaction with outcome among prostate-cancer survivors. N Engl J Med 2008; 358: 1250-1261.
11) Wilson KA, Dowling AJ, Abdolell M, Tannock IF. Perception of quality of life by patients, partners and treating physicians. Qual Life Res 2000; 9: 1041-1052.
12) Gill TM, Feinstein AR. A critical appraisal of quality-of-life measurements. JAMA 1994; 272: 619-626.
13) Schmidt S, Garin O, Pardo Y, Valderas JM, Alonso J, Rebollo P, Rajmil L, Garcia-Forero C, Ferrer M; EMPRO Group. Assessing quality of life in patients with prostate cancer: a systematic and standardized comparison of available instruments. Qual Life Res 2014; 23: 2169-2181.
14) Stockler MR, Osoba D, Corey P, Goodwin PJ, Tannock IF. Convergent discriminitive, and predictive validity of the Prostate Cancer Specific Quality of Life Instrument (PROSQOLI) assessment and comparison with analogous scales from the EORTC QLQ-C30 and a trial-specific module. European Organisation for Research and Treatment of Cancer. Core Quality of Life Questionnaire. J Clin Epidemiol 1999; 52: 653-666.
15) Stockler MR, Osoba D, Goodwin P, Corey P, Tannock IF. Responsiveness to change in health-related quality of life in a randomized clinical trial: a comparison of the Prostate Cancer Specific Quality of Life Instrument (PROSQOLI) with analogous scales from the EORTC QLQ-C30 and a trial specific module. European Organization for Research and Treatment of Cancer. J Clin Epidemiol 1998; 51: 137-145.
16) Fernández-Arjona M, de la Cruz G, Delgado JA, Malet JM, Portillo JA. Validation in Spain of the quality of life questionnaire PROSQOLI in patients with advanced prostate cancer. Actas Urol Esp 2012; 36: 410-417.
17) Alvarez-Maestro M, Viladoms JM, Fernández A, De la Cruz G. Evaluation of the clinical usefulness of a health-related quality of life questionnaire in patients with prostate cancer. Actas Urol Esp 2014; 38: 669-677.
18) Melzack R. The McGill pain questionnaire: from description to measurement. Anesthesiology 2005; 103: 199-202.
19) Gandek B, Ware JE, Aaronson NK, Apolone G, Bjorner JB, Brazier JE, Bullinger M, Kaasa S, Leplege A, Prieto L, Sullivan M. Cross-validation of item selection and scoring for the SF-12 Health Survey in nine countries: results from the IQOLA Project. International Quality of Life Assessment. J Clin Epidemiol 1998; 51: 1171-1178.
20) Kodraliu G, Mosconi P, Groth N, Carmosino G, Perilli A, Gianicolo EA, Rossi C, Apolone G. Subjective health status assessment: evaluation of the Italian version of the SF-12 health survey. Results from the MiOS project. J Epidemiol Biostat 2001; 6: 305-316.
21) Mohler JL. The 2010 NCCN clinical practice guidelines in oncology on prostate cancer. J Natl Compr Canc Netw 2010; 8: 145.
22) Sharp LK, Knight SJ, Nadler R, Albers M, Moran E, Kuzel T, Sharifi R, Bennett C. Quality of life in low-income patients with metastatic prostate cancer: divergent and convergent validity of three instruments. Qual Life Res 1999; 8: 461-470.