

The association between age and gender and the financial burden in cancer patients: A pooled analysis of closed EORTC cancer trials

Quinten C¹, Martinelli F¹, Coens C¹, Maringwa J¹, Cleeland C², Flechtner H³, Gotay C⁴, Greimel E⁵, King M⁶, Osoba D⁷, Taphoorn MJB⁸, Reeve B⁹, Ringash J¹⁰, Schmucker-Von Koch J¹¹, Weis J¹², Bottomley A¹

¹EORTC, Brussels, Belgium, ²U.T.M.D. Anderson Cancer Center, Houston, TX, USA, ³City Hospital Magdeburg, Magdeburg, Germany, ⁴University of British Columbia, Vancouver, BC, Canada, ⁵Medical University Graz, Graz, Austria, ⁶University of Sydney, Sydney, Australia, ⁷QOL Consulting, West Vancouver, BC, Canada, ⁸VU University Medical Center/Medical Center Haaglanden, Amsterdam/Den Haag, Netherlands, ⁹National Cancer Institute, Bethesda, MD, USA, ¹⁰The Princess Margaret Hospital, Toronto, ON, Canada, ¹¹University of Regensburg, Regensburg, Germany, ¹²University of Freiburg, Freiburg, Germany

BACKGROUND

When patients are diagnosed with cancer, their main concern will be: 'How long will I live?'. One of their secondary concerns focuses on loss of income because of their illness and on the financial costs of their treatment. Although this may be of a lesser concern for patients who have health insurance, it can still be a topic of concern that may affect the overall well being of a cancer patient.

A patient's individual characteristics may influence how he or she perceives this burden. The objective of this analysis was to investigate the influence of age and gender on the financial burden of cancer patients, as evaluated by the European Organisation for Research and Treatment (EORTC) QLQ-C30.

EORTC QLQ-C30 Questionnaire

The EORTC QLQ-C30 is a questionnaire developed to assess the quality of life of cancer patients. The questionnaire is composed of 5 multi item scales (physical, role, social, emotional and cognitive functioning) and 9 single items (pain, fatigue, financial impact, appetite loss, nausea/vomiting, diarrhea, constipation, sleep disturbance and quality of life). The EORTC QLQ-C30 is graded on a four-point scale from 1 'not at all' to 4 'very much' and thereafter linear transformed to a scale from 0 to 100. A high score for a functioning/global health scale represents a high/healthy level of functioning and a high score for a symptom scale represents a high level of symptomatology/problems.

METHODS

In 30 EORTC Randomized Controlled Trials patients completed a baseline health related quality of life assessment, using the EORTC QLQ-C30. Clinical data included age (≤ 60 vs. > 60), gender (men vs. women), distant metastasis (no vs. yes), World Health Organization (WHO) Performance status (PS) (WHO 0-1 vs. WHO 2-3) and cancer site. A linear regression model was applied to examine the association of financial burden with age and gender, adjusted for WHO Performance Status, distant metastasis and cancer site. Interactions between all variables were included in the model. The level of significance was set at $p=0.05$.

RESULTS

A total of 5,629 (55.69%) patients provided both clinical data and assessment of the financial symptom scale of the EORTC QLQ-C30. Financial impact of the disease was highly associated with age, with older patients reporting a lower financial burden than younger cancer patients (10.29 vs. 22.29, $p<.0001$). Males reported a slightly higher mean score than females for their financial burden (17.88 vs. 14.71, $p=0.0019$).

These gender findings were consistent across both age groups as interaction between age (Figure 1.) and gender (Figure 2.) was found not significant ($p=0.2297$). Additionally, low Performance Status was associated (20.89 vs. 12.59, $p<.0001$) with greater financial burden, but this differed with age (interaction with PS, $p=0.0123$) and gender (interaction with PS, $p=0.0395$). Cancer site and disease severity, i.e. distant metastasis were not associated with the financial burden of cancer patients.

Linear regression analysis

Variable	Classification	Nr. of Observations	Predicted Mean Score QLQ-C30 Financial Burden Scale	p-value
Age	(≤ 60 vs > 60)	(4,827 vs 2,590)	(10.29 vs 22.29)	$<.0001$
Gender	(Men vs Women)	(4,666 vs 2,749)	(17.88 vs 14.71)	0.0019
PS	(0-1 vs 2-3)	(6,507 vs 529)	(12.59 vs 20.89)	$<.0001$
PS*Age				0.0123
PS*Gender				0.0395

Figure 1. Interaction between WHO Performance Status and age

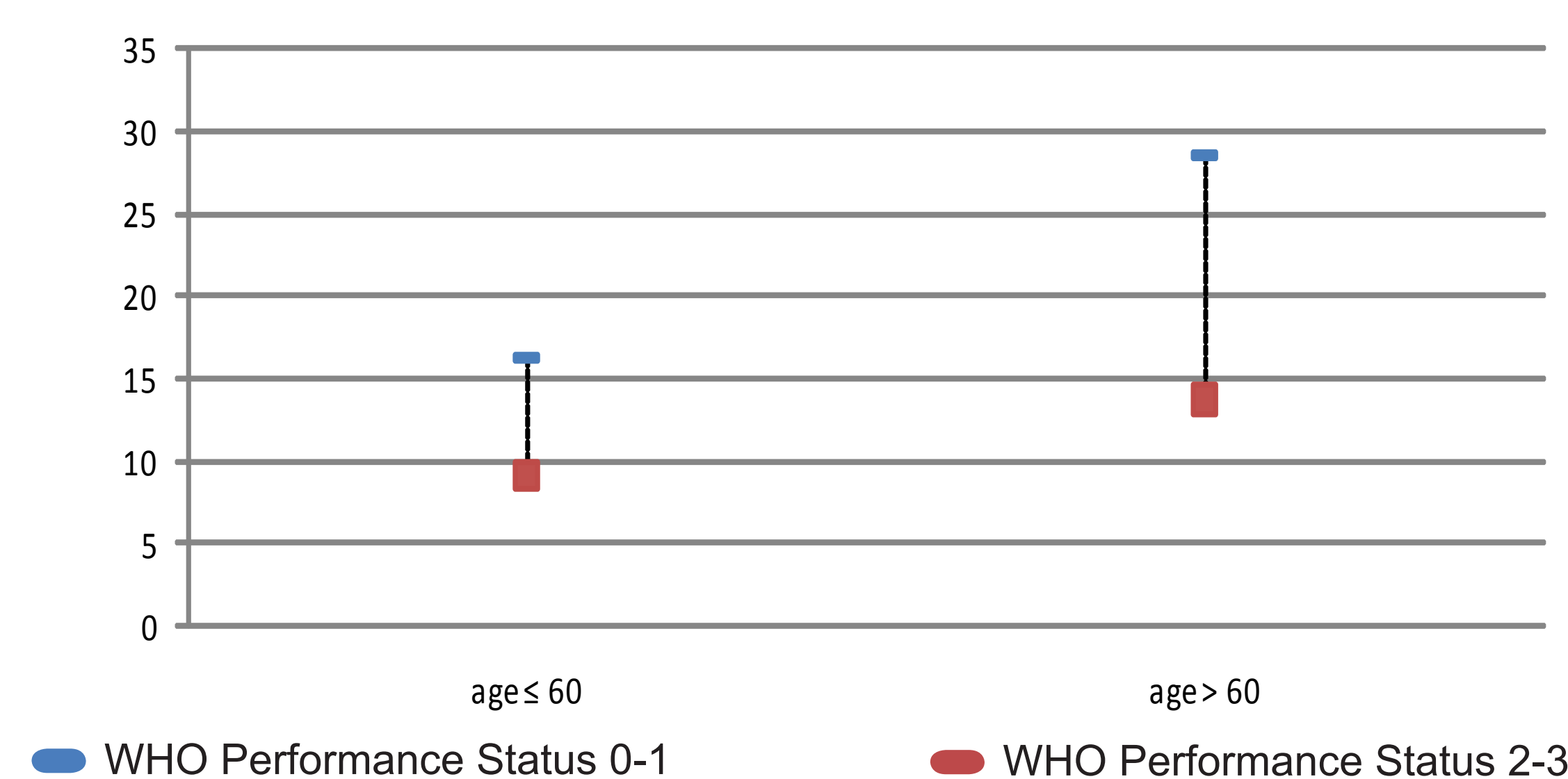
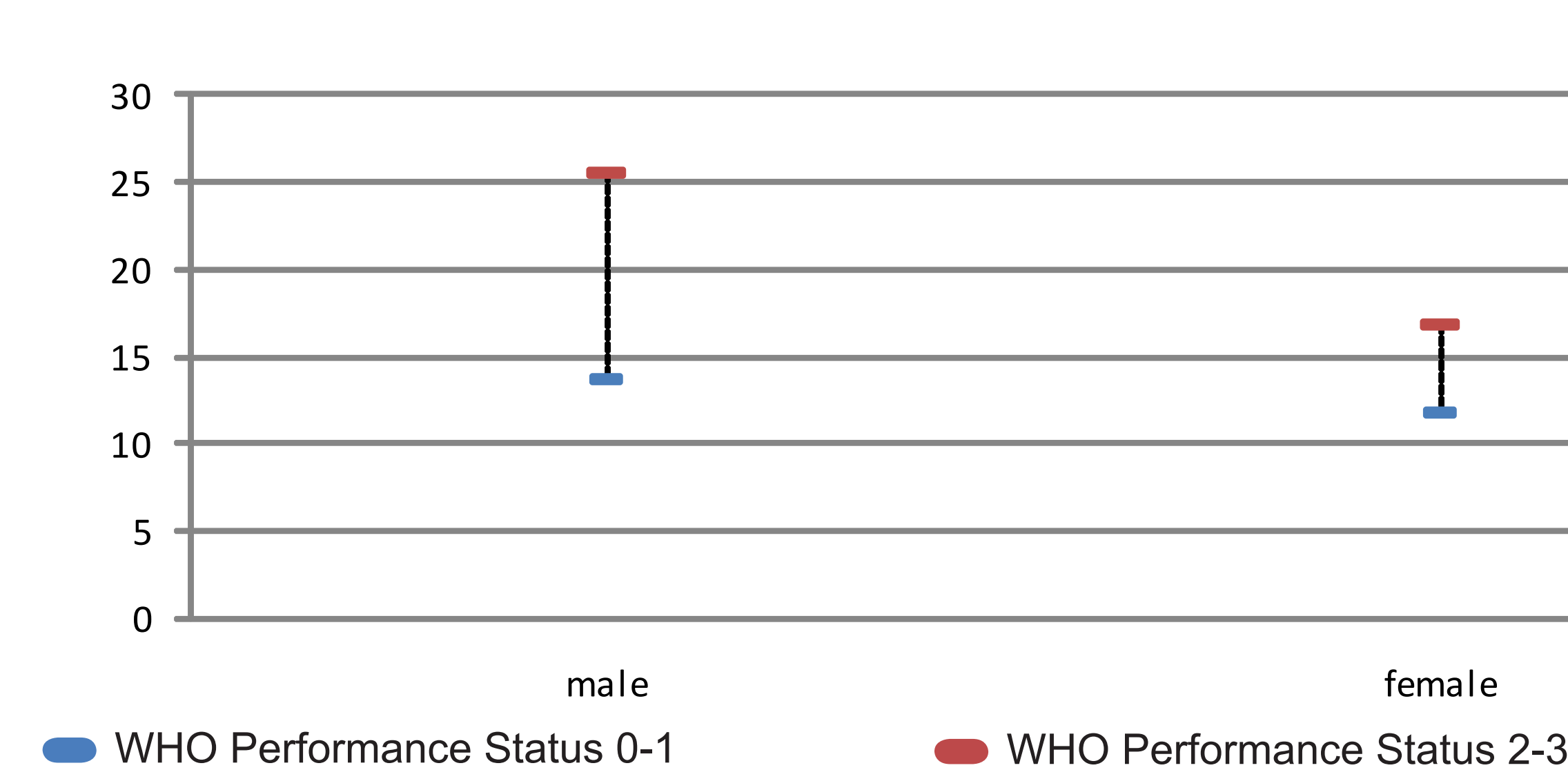


Figure 2. Interaction between WHO Performance Status and gender



ACKNOWLEDGEMENT

We would like to express our considerable appreciation to all members of all EORTC Groups who kindly agreed to give permission to undertake this academic study. We also thank the EORTC Headquarters for their support. We thank Stéphanie Vandergooten and Sheila Sanderson for assistance with the poster text and design. The project was funded by an unrestricted academic grant from the Pfizer Foundation, administered through the King Baudouin Foundation, for the EORTC PROBE group. We thank all the members of PROBE for their valuable contribution to this ongoing research.

CONCLUSION

Age, gender and Performance Status are determinants of a cancer patient's financial burden. Less financial burden was experienced by older people, especially older women and persons with poor Performance Status. Taking into consideration previous work by Osoba et al. (1998) we see that a relevant difference was perceived only between younger and older cancer patients.