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Quality-of-life in elderly patients with cancer: A short review

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ABSTRACT

Background: Prolongation of survival and maintenance or improvement of health-related quality-of-life (HRQoL) are the two important goals within the treatment of individual patients. Due to the severity of symptoms and the toxicity of treatment, HRQoL has become a major area of concern when treating cancer patients in general and elderly patients in particular.

Patients and methods: We present a literature review of HRQoL aspects in elderly patients with cancer and especially address the topic whether impairments in the different tools of a comprehensive geriatric assessment (CGA) are associated with decreased HRQoL in elderly cancer patients.

Results: Elderly cancer patients tend to weight their HRQoL as more important than gain in survival, when compared to younger patients. An age-dependent decrease in different scales of HRQoL is reported in patients and normative samples. HRQoL is also a predictor of survival. The variation of HRQoL can be used in trials comparing different treatment options. In individual patients, regular measurement of HRQoL aims to improve patients-centred care. Age related impairments of different areas of CGA are associated with decreased HRQoL in elderly cancer patients.

Conclusions: HRQoL is an important outcome with elderly cancer patients and should be assessed regularly and thoroughly.

1. Introduction

Cancer is one of the world's most common diseases. For most types of cancer, incidence rates increase with advancing age.[1] Over 50% of all new cancer cases are diagnosed in people aged 65 years or older, and over 60% of all cancer deaths occur in this group of the population. Thus cancer is a disease mainly affecting elderly people. Demographic changes will result in an increasing number of cancer patients within the coming decades and elderly people will be disproportionately affected.[2]

Due to the symptoms caused by the disease, the toxicity of treatment and a treatment approach, which is often palliative, health-related quality-of-life (HRQoL) has become a major interest for patients with cancer, their caregivers and for scientists planning trials.

We provide a review on HRQoL with a focus on elderly patients with cancer. In the first part, we address the following topics: definition of HRQoL, importance of HRQoL, instruments to measure HRQoL, HRQoL in elderly patients in general and in elderly cancer patients in particular, prognostic importance of HRQoL, HRQoL in cancer survivors, HRQoL in

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clinical trials, and improvement of HRQoL by measurement of HRQoL. In the second part, we performed a literature research covering the question, whether impairment in different tools of the comprehensive geriatric assessment (CGA) are associated with changes in HRQoL in elderly patients with cancer. In the third part, we address practical problems in the measurement of HRQoL in elderly patients and mention topics of future research.

1.1. *Definition of health-related quality-of-life (HRQoL)*

HRQoL is an individual's perception of their position in life in the context of the culture and the value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad-ranging concept incorporating the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of the environment.[3]

2. Definition of elderly patients

There is no generally accepted definition of the term elderly. Some authors used 60 years, others 65, 70, or 75 years. The International Society of Geriatric Oncology (SIOG) recommends to include patients aged 70 years and older in a systematic CGA.[4]

3. Why is HRQoL important?

Health-related quality-of-life (HRQoL) is a major area of concern in the treatment of patients with cancer,[5] especially in elderly patients and those treated within a non-curative approach. As we consider survival and HRQoL as the two main outcome parameters of importance for individual patients, we must have the ability to evaluate HRQoL outcomes as comprehensively and rigorously as survival.[6]

4. How should we measure HRQoL?

As HRQoL is subjective, patients should rate their HRQoL themselves.[7] Rating by a physician or by relatives has shown to be inaccurate, but sometimes is inevitable. As Dempster and Donnelly described, most elderly patients are able to identify areas of their lives, which are important to them, rate their level of functioning on each of these areas and rank their life areas in order of importance, but the majority were unable to provide a weighting.[8]

There are different questionnaires available to rate HRQoL, according to the type of patients addressed by HRQoL measurement, e.g. general population, general patients, or cancer patients. One of the most widely used questionnaires is the 36-items Short Form Health Survey (SF-36).[9,10] Shorter and validated versions are available, SF-12[11] and SF-8.[12] The SF-36 is validated in a sample of 9897 subjects, aged 65–104 years.[13] The SF-36 has been used in cancer patients, though not especially designed for such patients.

The EuroQual (EQ-D5) is a standardised, self-reported, valid and reliable instrument. It is not disease-specific. It is a two-part instrument. Part 1 comprises five 'domains' of self-reported problems. Mobility, self-care, usual activities, pain/discomfort and anxiety/depression, each rated on a 3-point Lickert scale. Part 2 comprises a visual analogue scale to rate one's overall health status. It was intended to complement other quality-of-life measures, but is now increasingly used as a 'stand-alone' measure.[14] It is a standardised instrument for use as a measure of health outcome. It is applicable to a wide range of health conditions and treatments, and provides a simple descriptive profile and a single index value for health status. The EQ-5D is available in different language versions (www.euroqol.org).

5. Measurement of HRQoL in cancer patients

The three most widely used questionnaires designed for use in cancer patients are described in Table 1. A PubMed search in April 2007, with the limits (age 65+, English, humans and cancer) revealed 350 citations for 'European Organisation for Research and Treatment of Cancer quality-of-life questionnaire (EORTC-QLQ-C30)', 99 for the 'FACT-G' and 44 for 'Functional Living Index-Cancer' (see Table 1).

5.1. *FACT-G*

The functional assessment of cancer therapy – general (FACT-G) identifies issues often encountered by people diagnosed with a malignancy. It was first described by Cella et al.[15] The domains explored in the instrument are physical well-being; social/family well-being; emotional well-being; functional well-being and relationship with their physician. The five domains are formulated in separate subscales that make up a series of 28 Likert-type items. Participants are asked to respond to each item on a scale of 0–4, with 0 meaning 'not at all' and 4 meaning 'very much'. Possible range of scores are from 0 to 112. In the study by Cella et al., validity had been assessed in a population of 845 patients with a median age of 60 years (19 of the subjects were aged 75 years and older). A validation in elderly patients with cancer was performed by Overcash et al.[16]

Table 1 – Questionnaires to measure general HRQoL in cancer patients

Name	Abbreviation	Age mean (range)	Literature
European Organisation for Research and Treatment of Cancer Quality-of-Life Questionnaire	EORTC-QLQ-C30	63 (39–89)	[17]
Functional assessment of cancer therapy – general	FACT-G	60 (27–76)[a]	[15]
Functional living index – cancer	FLIC		[70]

a Only for part of the patients reported.

5.2. *EORTC-QLQ-C30 questionnaire*

The EORTC-QLQ-C30 questionnaire is cancer-specific, multidimensional in structure, appropriate for self-administration and applicable across a wide range of settings.[17] The core-questionnaire is supplemented by disease-specific modules, e.g. Breast, Lung, Head and Neck, Oesophageal, Ovarian, Gastric, Cervical cancer and Multiple Myeloma or treatment-specific modules, e.g. Palliative Care questionnaire (QLQ-C15-PAL) (www.eortc.be). The validity of the general questionnaire is high. It has been translated and validated into 81 languages. Fifteen scales cover different aspects contributing to HRQoL of the patient, five functional scales, nine symptom scales, and one scale measuring global health status/HRQoL. QLQ-C30 Version 3.0 is the most recent version and should be used.

6. HRQoL in normative samples

A variety of HRQoL questionnaires have been used in normative samples of the general population. Data on the use of the EORTC-QLQ-C30 in normative samples are reported in Table 2. Normative samples report an age-dependent decrease of different scales of HRQoL in the general population compared to younger ones. However, none of the reports on normative samples included an assessment of age-associated changes, like CGA, to learn, whether the changes are related to age itself or to age-associated changes. The reported data of HRQoL in cancer patients are considerably below that of a cohort of elderly people from the general population.[18]

7. HRQoL in elderly patients

Hickey et al. recently published a systematic review of the literature identifying studies measuring HRQoL in older patients. A total of 37 studies were identified. The majority of studies used a generic HRQoL instrument, most commonly the SF-36. None of the studies used HRQoL measurement instruments that were old-age specific.[19] As most of the scales were closely related to physical functioning (PF) and PF decreases with increasing in age, comparison between age groups may be biased.

8. How important is HRQoL for elderly patients with cancer?

Elderly cancer patients are more often treated within a non-curative approach. Elderly cancer patients are more vulnerable to cancer treatment. Therefore, it is a major task to weight the risk of side effects, which impair HRQoL, against the possible benefit.

Table 2 – Defined normative sample in different European countries for the EORTC-QLQ-C30 questionnaire

Country	No. of people	Age mean (range)	Age-dependent results reported	Literature
Germany	3016		Yes	[71]
Norway	1965		Yes	[72]
Sweden	3069	(18–79)	Yes	[73]

9. Areas addressed as important by elderly patients

Dempster and Donnelly asked 31 patients aged 75 years and older to rate areas of importance. Mobility was mentioned by all participants, followed by personal care (20), shopping (12), household (11), hobbies/pastimes (10), driving (8), religion (5), self-confidence (4), family (2), being free from pain (2) and working (2).[8] Elderly patients tend to complain less about symptoms, as Langer et al. described for elderly patients with lung cancer.[20]

In a prospective cohort trial in elderly patients with cancer aged 65 years and older, the most prevalent symptom was fatigue.[18]

10. Prognostic importance of HRQoL data

HRQoL data are of prognostic importance for survival in a hospitalised elderly population in general[22] in a variety of types of cancer, e.g. colorectal carcinoma, advanced non-small-cell-lung-cancer (NSCLC), but not in others such as non-metastatic breast cancer in particular.

The difficulty with this approach is, whether a worse HRQoL might be caused by a more advanced disease and therefore be of prognostic relevance or whether HRQoL itself is of prognostic relevance. Only a small number of trials report the predictive value of HRQoL on survival controlled sufficiently for other parameters, which express level of disease, such as stage, number of metastatic sites, and LDH. In patients with advanced colorectal cancer, the social functioning scale of the EORTC-QLQ-C30 questionnaire predicted survival in addition to the known effect of white blood cell count (WBC), alkaline phosphatase (AP) and the number of sites involved. The median age of the patients group was 61.2 years (range 23.6–76.1).[23]

In elderly patients with advanced NSCLC, Maione et al. identified pre-treatment global HRQoL as a predictor of survival in addition to instrumental activities of daily living (IADL), ECOG-performance-status and the number of metastatic sites.[24]

In a study of 448 patients with breast cancer aged 26.1–79.8 years (median 49.7), treated with adjuvant chemotherapy, none of the pre-selected HRQoL variables were of prognostic significance for overall or disease-free survival, in either the univariate or multivariate analysis.[25] In patients with metastatic breast cancer, ECOG-PS and loss of appetite were the variables that best predicted survival.[26]

11. HRQoL in cancer survivors

Cancer survivors tend to have significantly lower scores in HRQoL than age-matched non-cancer individuals.[27] Exemplarily breast and prostate cancer and Non-Hodgkin's lymphoma are chosen, as they belong to the most common solid tumours or haematological malignancies in elderly cancer patients.

11.1. *Breast cancer*

Mols et al. analysed the HRQoL of breast cancer survivors reported in 10 selected studies. Most studies reported that long-term survivors of breast cancer experienced a good overall quality-of-life. However, almost all studies reported that breast cancer survivors experienced some specific problems (e.g. a thick and painful arm and problems with sexual functioning). The current medical condition, amount of social support and current income level were strong positive predictors of HRQoL, and the use of adjuvant chemotherapy emerged as a negative predictor.[28] Fehlauer et al. noticed that older breast cancer survivors (>65 years versus <65 years) had decreased physical functioning, role functioning and sexual functioning compared to their younger counterparts.[29]

11.2. *Prostate cancer*

In a cross-sectional study, long-term prostate cancer survivors (>5 years) reported comparable health-related HRQoL scores, worse general health perceptions and better mental health scores than an age-matched, normative Dutch population. Patients who underwent radical prostatectomy had the highest physical HRQoL, followed by patients who received 'watchful waiting', and then patients who received radiotherapy. Patients who received hormone treatment had the lowest physical HRQoL. But this was a cross-sectional study without baseline, therefore the findings need to be verified in longitudinal studies.[30]

11.3. *Non-Hodgkin's lymphoma (NHL)*

Five to 15 years after diagnosis, the general health perceptions and vitality levels of NHL survivors remained significantly lower than those of their peers in the general population. In addition, survivors faced practical problems with work and finances.[31] Tchen et al. demonstrated the feasibility of HRQoL assessment in elderly patients with malignant lymphoma.[32]

12. HRQoL in clinical trials

The general purpose of HRQoL assessment in clinical trials is to provide a more accurate evaluation of the well-being of individuals or groups of patients and the benefits and side-effects that may result from medical intervention. HRQoL can be a primary or secondary end-point of clinical trials to demonstrate patients' benefit comparing different treatment options.

An exemplary randomised phase III trial including HRQoL is published by Tannock et al. on the treatment of prednisolon versus mitoxantrone and prednisolon in symptomatic androgen refractory prostate cancer patients with pain control as primary end-point.[33] Osoba et al. reported the detailed HRQoL data from this trial.[34] HRQoL was assessed before treatment initiation and then every 3 weeks using the EORTC QLQ-C30. After 6 weeks, patients taking prednisone showed no improvement in HQL scores, whereas those taking mitoxantrone plus prednisone showed significant improvements in global quality-of-life, four functioning domains and nine symptoms, and the improvement lasted longer than in the prednisone-alone group.

Bottomley summarised the EORTC experience within this journal.[35] Within the EORTC, 24 trials, including 9276 patients, have been published, using the EORTC-QLQ-C30. In most of these trials the measurement of HRQoL provided new and important information that could be used by clinicians, patients and researchers to make treatment decisions. Currently there are more than 40 trials within the EORTC ongoing, including HRQoL assessment.

Efficace et al. have published the 'Minimum standard checklist for evaluation HRQoL outcomes in cancer clinical trials'.[36] Planning of randomised controlled trials (RCTs) involving HRQoL measurement and reporting of RCTs should include the 11 items listed in Table 3.

Table 3 – Minimum standard checklist for planning and reporting HRQOL in clinical trials[36]

Category	Question
Conceptual	Is a prior hypothesis stated? Is a rationale for the instrument used stated?
Measurement	Are psychometric properties reported? Is cultural validity given? Are domains covered adequate?
Methodology	Is the instrument used specified? Is the baseline compliance rate stated? Is the timing of assessments documented? Are missing data documented?
Interpretation	Is clinical significance addressed? What is the meaning of the results for clinical practice?

13. Does measurement of HRQoL improve HRQoL?

To complete a HRQoL questionnaire is bothersome for the patient and does not improve his HRQoL immediately. Velikova et al. conducted a prospective randomised trial to examine the effects on process of care and patient well-being, of the regular collection and use of HRQoL data in oncology practice. Patients were randomly assigned to either the intervention group (regular completion of the EORTC-QLQ-C30 and Hospital Anxiety and Depression Scale, and feedback of results to physicians); attention-control group (completion of questionnaires, but no feedback); or control group (no HRQoL measurement in clinic before encounters). Patients in the intervention and attention-control groups had better HRQoL than the control group, but the intervention and attention-control groups were not significantly different. A positive effect on emotional well-being was associated with feedback of data, but not with instrument completion. A larger proportion of intervention patients showed clinically meaningful improvement in HRQoL. More frequent discussion of chronic non-specific symptoms was found in the intervention group, without prolonging encounters.[37] However the trial was not restricted to elderly patients and the median age of participants was about 55 years.

Thus, a structured HRQoL assessment improves a patient-centred care and outcome on patients.

14. Comprehensive geriatric assessment (CGA)

Ageing is a universal and physiological process. Growing old is associated with a variety of physical, emotional and social changes. The functional reserve decreases and the number of comorbidities increase. A variety of important age-related changes in elderly patients might be missed by routine history taking and physical examination. These changes are detected by a CGA. CGA was established in Geriatric Medicine. It serves for diagnostic purposes, for the individual planning of care, and for quality assurance, this includes measurement of functional abilities, cognitive function, depression, mobility, nutritional status, and social situation. Assessment-based treatment improves the quality-of-life of frail elderly cancer patients.[38] We will report on the association of changes in items of CGA with HRQoL in elderly cancer patients. Results are summarised in Table 4.

Until recently, data collected and published on HRQoL in patients with cancer have been essentially limited to middle-aged adult patients. Little is known about differences between elderly and younger patients in relation to their HRQoL. Often elderly patients in clinical trials are a highly selected group of patients, not representing the entire elderly population of those older people with cancer.[39] An up-to-date literature research (PubMed April 2007) was performed. After setting limits (age 65+, English, humans and cancer), the term 'cancer' identified 144,505 quotations, the addition of 'quality-of-life' 5436, the addition of 'elderly' 335 and the addition of 'geriatric assessment' 39 quotations: 20 reviews, 16 original articles, 2 guidelines and 1 editorial. Of the 16 original papers, 8 did not include HRQoL data, 1 excluded cancer patients, 1 was a survey amongst surgeons. The remaining six articles are included in the prior or further description.[21,22,32,38,40] Further articles cited were available from the authors files.

15. Factors influencing HRQoL

Elderly patients in general, and cancer patients in particular, regard the maintenance or regaining of HRQoL as an important goal in cancer treatment.[42] Consequently, it is important to know, which factors influence HRQoL in elderly cancer patients.

15.1. *Age*

Whereas some authors describe a decrease in HRQoL with increasing age in elderly cancer patients,[18] others do not.[40]

15.2. *Functional status*

Older people require more of their energy to maintain their daily activities.[43] Therefore, functional status is of major importance to elderly people. To stay independent is one of the most important goals for elderly people. In Oncology, the measurement of functional status/performance-status by Karnofsky-PS,[44] ECOG-PS or WHO-PS is established and is routine in qualified oncological care. In Geriatric Medicine, other scales to assess functional abilities have been established, such as activities of daily living (ADL), and instrumental activities of daily living (IADL). Their measurement is part of a routine geriatric assessment.[4] A number of studies have reported an interaction between Karnofsky-performance-status (PS), ECOG-PS or WHO-PS, and HRQoL.[45,46] Very few papers have analysed the association between ADL or IADL and HRQoL in elderly cancer patients.[18,47,48]

15.3. *Mobility*

Guralnik et al. identified cancer, stroke and hip fracture as major risk factors for severe mobility disability.[41]

15.4. *Anaemia*

Anaemia, frequently associated with cancer and cancer treatment, can cause a variety of symptoms that diminish overall quality-of-life. The functional assessment of cancer therapy-anaemia (FACT-An) Scale is a useful measure of HRQoL in cancer patients and focuses on the widespread clinical problems of anaemia and fatigue.[49] Elderly cancer patients do not have a higher incidence of anaemia than younger cancer patients. An association of anaemia with global HRQoL and with fatigue has been described.[49–51] The effect of anaemia on HRQoL in addition to the known influence on functional status has not yet been well studied. Within our Geriatric Oncology Programme we observed that anaemia impaired HRQoL in addition, resulting in poor functional status in elderly cancer patients, but not in younger cancer patients.[52]

Table 4 – Areas of geriatric assessment (GA) and health-related quality-of-life (HRQoL) in (elderly) cancer patients

Areas of functional abilities	GA score ADL	HRQoL score EORTC-QLQ-C30	Patients 65+ newly diagnosed with cancer	Effect Poor ADL – decreased HRQoL	Author [18]
	ADL	EORTC-QLQ-C30	75+ with cancer	Poor ADL – decreased HRQoL	[47]
	IADL	EORTC-QLQ-C30	60+ newly treated cancer patients	Poor IADL – decreased HRQoL	[48]
Mobility	Six-minute walk test	SF-36	18–78 newly diagnosed with lung cancer	Short distance – decreased HRQoL	[74]
Cognition	MMSE	EORTC-QLQ-C30	18+ cancer patients	No interaction	[65]
Depression	BDI	EORTC-QLQ-C30	18+ cancer patients	Depression – decreased HRQoL	[62]
Social support	ISSI	EORTC-QLQ-C30	65+ newly diagnosed with cancer	No interaction	[18]
Comorbidity	CIRS-G	EORTC-QLQ-C30	60+ newly treated cancer patients	Severe comorbidity – decreased HRQoL	[48]

15.5. *Comorbidity*

Comorbidity is the presence of one or more additional disorders in the presence of a cancer diagnosis. A number of elderly cancer patients suffer from comorbidities. Janssen-Heijnen et al. reported the importance of comorbidities in cancer patients based on data from the Eindhoven Cancer Registry.[53] Extermann et al. reported comorbidity and functional status to be only weakly correlated.[54] The influence of comorbidities on HRQoL is not well-studied. A number of authors report that cancer survivors who have comorbidities have worse HRQoL-scores than those without comorbidities.[55–57] The influence of comorbidity prior to chemotherapy has not yet been described. A Dutch and a Swedish study have demonstrated that an increase in chronic health problems is associated with a reduction in HRQoL irrespective of age within the general population.[58,59] Within our Geriatric Oncology Programme, we could demonstrate that cancer patients with comorbidity have a worse HRQoL than those without comorbidity and that the influence is independent of functional impairment.[48] We investigated initial global QoL in 477 patients: 195 cancer patients aged 60 years or older, 152 cancer patients below the age of 60 years, admitted as inpatients for chemotherapy initiation, and 130 patients aged 60 years or older, admitted for non-cancer-related disorders. Global QoL was assessed by the EORTC-QLQ-C30 subscale, functional status by the Karnofsky performance scale (KPS) and the instrumental activities of daily living (IADL) scale, and comorbidity by the Cumulative Illness Rating Scale (CIRS). In a multivariate analysis, global QoL is significantly associated with KPS, IADL and comorbidity in elderly cancer patients, with KPS and IADL in younger cancer patients, and with age, KPS and IADL in elderly patients with non-cancer-related disorders.

15.6. *Depression*

Depression is a common problem in elderly people. Within the CGA, there is a tool to screen for depression. Depression is a major factor influencing HRQoL. The prevalence of depression is slightly increasing with age in the general population and is reported to be about 4.5–9.3% in women and 2.3–3.2% in men. Masie provides an extensive systematic review on the prevalence of depression in cancer patients. The reported prevalence of depression in cancer patients varies from below 1% to greater than 50%, for major depression a prevalence of 0–38%, and for depressive symptoms of 0–58%.[60] Age-group-specific figures are not reported. Repetto et al. reported that 40% of elderly cancer patients showed signs of depression when screened with the geriatric depression scale (GDS).[61] The measurement of depression in cancer patients is difficult. Somatic changes, e.g. loss of appetite, weight loss, sleeplessness, can be diagnostic criteria for depression, but are common problems in cancer patients as well. Within our Geriatric Oncology Programme, we observed a significant association between the presence of depression or depressive symptoms measured by Beck's depression inventory (BDI) and global QoL measured by EORTC-QLQ-C30 questionnaire.[62] In addition, we could demonstrate that functional impairment and depression independently contribute to HRQoL.[63]

15.7. *Dementia*

The assessment of HRQoL in patients with dementia is difficult. Struttmann et al. validated a HRQoL measurement instrument in patients with moderate dementia and compared the results to cancer patients.[64] Few trials report HRQoL in cancer patients with dementia. Iconomou et al. did not find a correlation between cognitive function, measured by mini-mental-status-examination (MMSE), and HRQoL, measured by EORTC-QLQ-C30, in a group of patients of mean age 60 years.[65]

HRQoL is decreased when elderly patients with cancer have deficits in different areas of CGA. Trials on HRQoL in elderly cancer patients should therefore adjust for age-associated changes detected by CGA.

16. Practical problems with HRQoL measurement in older patients

Maio and Perrone cite the following methodological problems of QoL evaluation in elderly cancer patients: (1) higher proportion of illiteracy as compared to younger patients, (2) presence of cognitive disorders with difficulty to understand QoL questionnaires, (3) presence of comorbidities potentially confusing the real impact of cancer and treatment on QoL, (4) the poor validation of QoL instruments in elderly cancer patients, and (5) analysis of QoL data from subgroups of elderly patients enrolled in clinical trials without upper age limits suffer from selection bias.[66] In elderly patients, it can be further complicated by poor eyesight, hearing difficulties and fatigue or by poor performance status.[67]

Within the palliative care setting, about 25% of patients are not able to fill in a HRQoL questionnaire. Thus there are areas when clinicians need to rely on HRQoL judgement by proxies or care givers.[7] The EORTC QoL-Group has created an abbreviated version of the EORTC-QLQ-C30 questionnaire, the EORTC-QLQ-C15-PAL for use in the setting of palliative medicine.[68]

17. Open questions and future research

A central question which still requires further attention is which changes in HRQoL are clinically meaningful?[35] An international experts' statement is reported by Whyrwich et al.[69] Another central question is whether cut-off levels exist for triggering intervention, when measuring HRQoL in daily practice? Still considerable research in HRQoL is necessary.

Within a future project, the EORTC QoL-Group and the Cancer in the Elderly Task-Force, address the questions, whether specific QoL questionnaires are necessary in elderly cancer patients and how they have to be designed.

Conflict of interest statement

No financial or personal relationship with other people or organisations that could inappropriately influence the presented work exists for any author.

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