

Geriatric assessment and deterioration of health-related quality of life after treatment for head and neck cancer

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Introduction

The presence of geriatric deficits is abundant in patients with head and neck cancer (HNC). Accumulation of these deficits leads to frailty. It is known that the HNC population is particularly prone to frailty. Frailty has extensively been associated with adverse treatment outcomes such as surgical complications, increased length of hospital stay, and worse overall survival; however, de relation between frailty and decline in Health-Related Quality of Life (HRQoL) has not been studied intensively.

Aims

- to identify which specific geriatric deficits exposed by a GA are related to deterioration of HRQoL
- explore relation between accumulation of domains with geriatric deficits and deterioration of HRQoL over time.

Methods

- Design: prospective observational study
- Setting: tertiary academic center
- Inclusion: patients diagnosed with any mucosal, salivary gland and complex cutaneous head and neck malignancy
- Time period: between October 2014 and May 2016
- Variables:
 - Baseline patient and tumor characteristics
 - Geriatric assessment: ACE-27 = Adult Comorbidity Evaluation 27; MUST = Malnutrition Universal Screening Tool ; ADL = Activities of Daily Living; IADL = Instrumental Activities of Daily Living; TUG = Timed Up & Go; MMSE = Mini Mental State Examination; GDS-15 = Geriatric Depression Scale
 - A domain was considered a ‘domain with deficits’ when one or more corresponding items were impaired

Outcome measures:

- Global Health Status/Quality of Life (GHS/QoL) scale of the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC-QLQ-C30).

Statistical analysis:

- Linear Mixed Models (LMMs) were used to analyze differences at three months after treatment (main effects, β (95% confidence interval)) and declining course per year during follow-up (interaction*time, β (95% confidence interval)), adjusted for baseline GHS/QoL scores, and age, sex, stage and treatment modality.

Results

Variable	Value
Age	
Mean ($\pm$ SD)	68.3 ($\pm$ 10.9)
Median (IQR)	68.2 (60.5-76.5)
Sex	
Male	193 (68.2)
Female	90 (31.8)
Reason for referral	
Primary tumor	266 (94.0)
Recurrent tumor	17 (6.0)
Tumor site	
Oral cavity	73 (25.7)
Nasal cavity and paranasal sinus	15 (5.3)
Nasopharynx	4 (1.4)
Oropharynx	52 (18.4)
Hypopharynx	9 (3.2)
Larynx	66 (23.3)
Salivary glands	5 (1.8)
Skin	52 (18.4)
Unknown primary tumor	7 (2.5)
Histopathology	
Squamous Cell Carcinoma	244 (86.1)
Other	39 (13.9)
Stage	
I	70 (25.2)
II	56 (20.1)
III	40 (14.4)
IV	112 (40.3)
Primary treatment	
Surgery	158 (55.8)
Postoperative radiotherapy	60 (21.2)
Postoperative chemoradiation	5 (1.7)
Radiotherapy	83 (29.3)
Chemoradiation	42 (14.8)
Comorbidity (ACE-27)	
None	62 (21.9)
Mild	99 (35.0)
Moderate	74 (26.1)
Severe	48 (17.0)
Polypharmacy	
< 5 medications	187 (66.1)
$\geq$ 5 medications	96 (33.9)
Malnutrition (MUST)	
No risk of malnutrition (< 1)	208 (78.8)
Medium to high risk of malnutrition ($\geq$ 1)	56 (21.2)
ADL	
Independent (< 1)	252 (89.7)
Dependent ($\geq$ 1)	29(10.3)
IADL	
No restrictions (< 1)	234 (82.7)
Restrictions ($\geq$ 1)	49 (17.3)
TUG	
Normal mobility (< 13.5s)	237 (87.5)
Restricted mobility ($\geq$ 13.5s)	34 (12.5)
Cognition (MMSE)	
No cognitive deficits (> 24)	249 (88.3)
Cognitive deficits ($\leq$ 24)	33 (11.7)
Depression (GDS-15)	
No signs of depression (< 6)	256 (91.1)
Signs of depression ($\geq$ 6)	25 (8.9)
Marital status	
In a relationship	212 (75.2)
Single	70 (24.8)
Living situation	
Independent	248 (88.3)
Assisted or nursing home	33 (11.7)

Table 1. Patient characteristics and geriatric assessment of the cohort included at baseline. Values presented as n (%) unless otherwise specified. SD = Standard Deviation. IQR = Inter Quartile Range

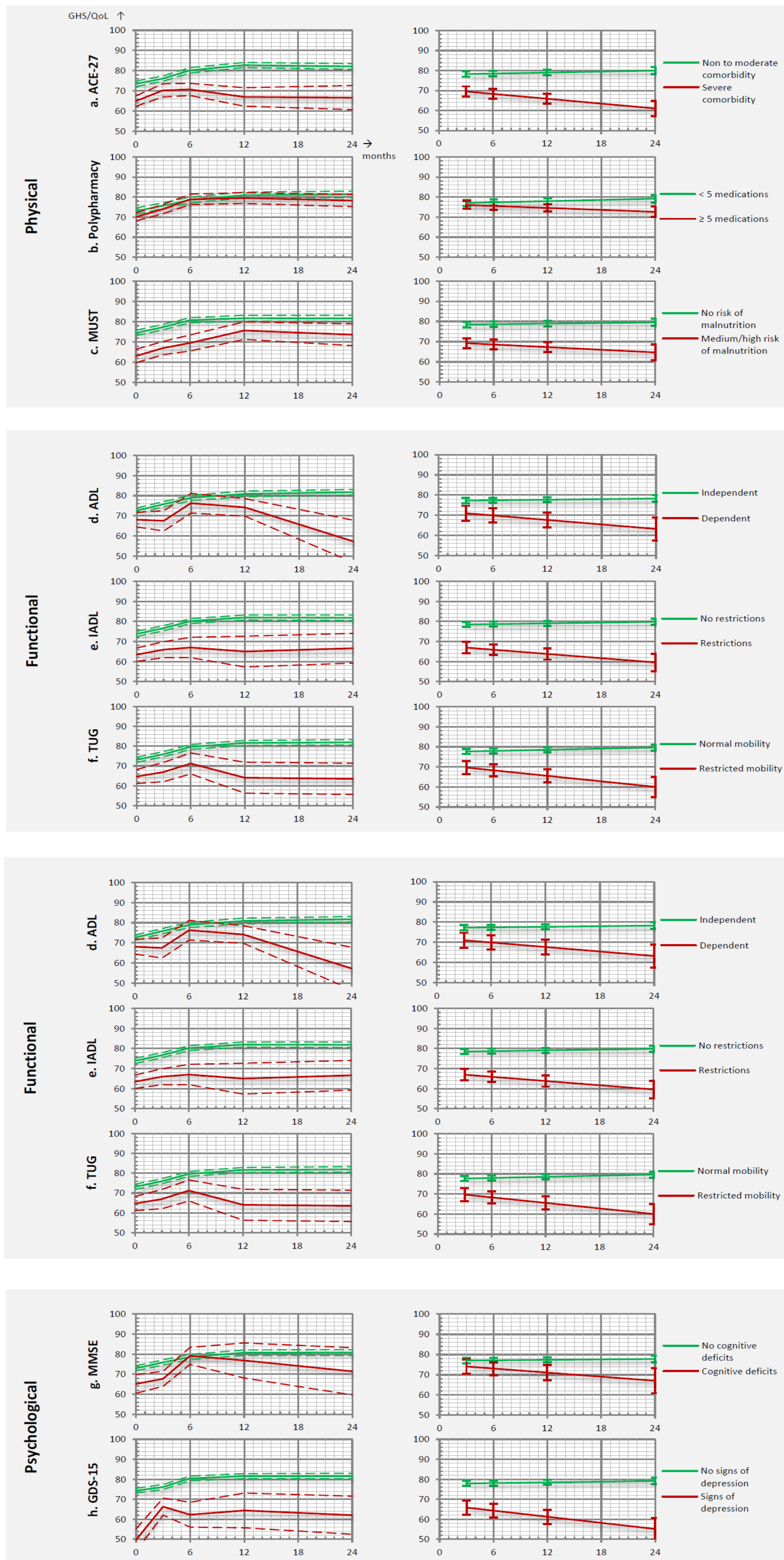
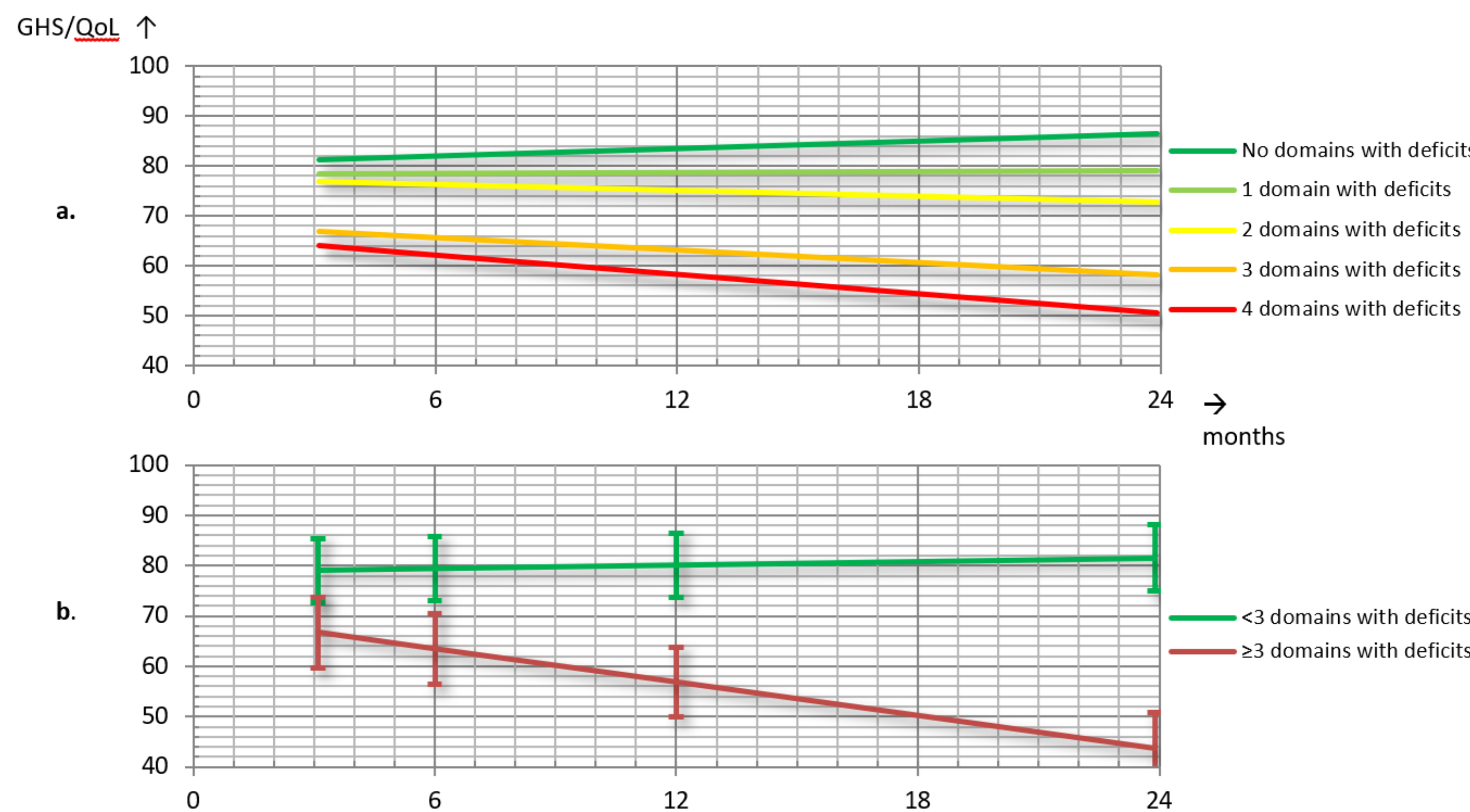


Figure 1 (left). Deterioration of Global Health Status/QoL over time (months) for patients with specific deficits as exposed during geriatric assessment before onset of treatment. Y-axis refer to the score on Global Health Status/QoL score on the EORTC-QLQ-C30 questionnaire. X-axis refer to time in months, in which 0 refers to the pre-treatment score. Figures on the left contain mean and standard error of the mean grouped by the binary outcome of the aforementioned geriatric assessment. Figures on the right contain predicted trajectories by the linear mixed effects models with corresponding standard error for the same geriatric assessment (estimates shown in Table 2).

Figure 2 (below). Predicted Global Health Status/QoL trajectory for patients with accumulation of domains with deficits. Y-axis refer to the predicted Global Health Status/QoL score on the EORTC-QLQ-C30 questionnaire by linear mixed effect models (Table 2). X-axis refer to time in months after treatment. A domain with deficits was defined as a geriatric domain (either physical, functional, psychological or socio-environmental) with at least one impairment on the items of geriatric assessment belonging to the corresponding domain. a. Increase in domains with deficits leads to increase in deterioration of Global Health Status/QoL after treatment (continuous model). b. Using three or more domains with deficits as a cut-off shows the strongest deterioration of Global Health Status/QoL.



Conclusions

- Within all geriatric domains (physical, functional, psychological, socio-environmental), deficits were significantly associated with short- and long-term deterioration of HRQoL.
- The accumulation of deficits in geriatric domains was a very significant factor associated with deterioration of both short- and long-term HRQoL.
- As elderly patients highly prioritize QoL, geriatric assessment on multiple domains may help patients and professionals in the proper shared decision making.