Correlation and Predictors of EORTC QLQ-C30 GHS-QoL and EQ-5D VAS in Patients with Advanced NSCLC

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Aim

To analyze correlation and identify predictors of EORTC QLQ-C30 GHS-QoL and EQ-5D VAS.

Conclusions

- Correlations between GHS-QoL and VAS, both overall and after stratification, ranged from 0.4 to 0.8, indicating moderate to strong associations.
- Worse ECOG PS was associated with lower GHS-QoL and VAS scores. Use of PD-(L)1 ICIs, college/university degree, and previously untreated status were associated with higher VAS scores.

Background

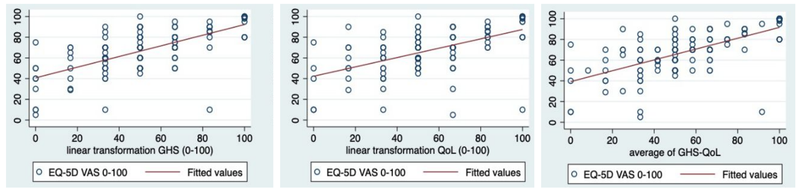
- Health-related QoL assessment assumes particular significance in advanced NSCLC, where cure is nearly unlikely, and patients may place a higher value on QoL over short-term survival benefits.
- PRO assessments are frequently overlooked in the hectic clinical practice of oncology.

Study design

- This single-center, cross-sectional study, conducted in Taiwan in 2024, analyzed baseline PROs collected using the EORTC QLQ-C30 and EQ-5D questionnaires from a longitudinal cohort of patients with advanced NSCLC receiving PD-(L)1 ICIs and/or chemotherapy.
- Pearson's correlation coefficients assessed the relationship between GHS-QoL and VAS.
- Linear regression models predicted GHS-QoL and VAS based on the following clinical factors: age, sex, education, smoking status, treatment line, work status (working/non-working), bone metastasis, CNS metastasis, EGFR/ALK/ROS1 aberration, ECOG PS, histology, and treatment modality (ICI-containing vs. chemotherapy-only).
- Variable selection for the regression models employed a stepwise procedure (p-value threshold for removal: 0.20), alongside manual review for clinical relevance.

Results

- The analysis included 126 patients (42.9% female; mean/median age=65 years, SD=9, IQR=59-71), with 18.3% receiving anti-PD-(L)1 ICIs.
- Mean scores were 54.23 for GHS-QoL, 67.55 for VAS.



- The overall correlation between VAS and GHS-QoL was 0.62 (GHS-VAS: 0.65; QoL-VAS: 0.55).

EORTC QLQ-C30 GHS-QoL

- Compared to the reference (ECOG PS=0, mean GHS-QoL=61.25), PS=1 showed a marginally significant negative association with GHS-QoL (β= -8.7), and PS=2 a significant negative association (β= -26.9).

EQ-5D VAS

- Relative to chemotherapy alone, ICI treatment was associated with significantly higher VAS scores (β= 14.57).
- Higher education (college/university) was also associated with higher VAS (β=11.21).
- Poorer ECOG PS (≥2) and subsequent-line therapy were associated with lower VAS score (β = -19.35 and β=-7.90).

Linear regression for EORTC QLQ-C30 GHS-QoL

Variable	Coefficient	Std. error	95% CI	P-value
ECOG PS = 0 (reference)	61.25	3.02	55.28, 67.22	<0.001
1	-8.70	4.50	-17.61, 0.21	0.056
≥2	**-26.94**	**6.42**	**-39.65, -14.22**	**<0.001**

Note:
- No other independent variables were statistically significantly associated with GHS-QoL.
- This model was selected for its clinical relevance; alternative models from automatic backward elimination, despite having slightly better Akaike Information Criterion and Bayesian Information Criterion values, were rejected due to limited clinical plausibility.

Linear regression for EQ-5D VAS

Variable	Coefficient	Std. error	95% CI	P-value
Education (ref: primary school or no formal education)				
College/university degree	**11.21**	**3.64**	**4.01, 18.41**	**0.003**
Postgraduate degree	15.51	9.41	-3.13, 34.16	0.102
CNS metastasis	6.25	3.78	-1.25, 13.74	0.101
EGFR/ALK/ROS1 aberrations	6.81	3.89	-0.90, 14.51	0.083
ICI-containing treatment (ref: chemotherapy-only regimen)	**14.57**	**4.36**	**5.95, 23.20**	**0.001**
Subsequent lines of therapy (ref: first-line treatment)	**-7.90**	**3.78**	**-15.40, -0.41**	**0.039**
ECOG PS ≥2 (ref: 0)	**-19.35**	**4.80**	**-28.85, -9.86**	**<0.001**
Overall significance				<0.001

Note: This model was selected for its clinical relevance and better Akaike Information Criterion and Bayesian Information Criterion values.

Abbreviations

AE, adverse event; CNS, central nervous system; ECOG PS, Eastern Cooperative Oncology Group performance status; EORTC, European Organisation for Research and Treatment of Cancer; EQ-5D, EuroQol 5-Dimension; GHS-QoL, global health status-quality of life; ICI, immune checkpoint inhibitors; NSCLC, non-small cell lung cancer; PD-L1, programmed death-ligand 1; PRO, patient-reported outcomes; QLQ-C30, Core Quality of Life questionnaire; VAS, visual analog scale.

References

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