Appendix for "Impacts of the Preceding Cancer-Specific Health-Related Quality of Life Measures on the Responses to the Subsequent EQ-5D-5L" in Health and Quality of Life Outcomes

Shoki Izumi[1*], B.S., Yasuhiro Hagiwara[2*], Ph.D., M.P.H., Yutaka Matsuyama[2], Ph.D., Takeru Shiroiwa[3], Ph.D., M.P.H., Naruto Taira[4], M.D., Ph.D., Takuya Kawahara[5], Ph.D., M.P.H., Keiko Konomura[3], Ph.D., Shinichi Noto[6], Ph.D., Takashi Fukuda[3], Ph.D., Kojiro Shimozuma[7], M.D., Ph.D.

[1] Biostatistics and Bioinformatics Course, Graduate School of Interdisciplinary Information Studies, The University of Tokyo, Tokyo, Japan

[2] Department of Biostatistics, School of Public Health, The University of Tokyo, Tokyo, Japan

[3] Center for Outcomes Research and Economic Evaluation for Health, National Institute of Public Health, Wako, Japan

[4] Department of Breast and Endocrine Surgery, Okayama University Hospital, Okayama, Japan

[5] Clinical Research Promotion Center, The University of Tokyo Hospital, Tokyo, Japan

[6] Center for Health Economics & QOL Research, Niigata University of Health and Welfare, Niigata, Japan

[7] Department of Biomedical Sciences, College of Life Sciences, Ritsumeikan University, Kusatsu, Japan

Correspondence to:

Yasuhiro Hagiwara, Ph.D.

Department of Biostatistics, School of Public Health, The University of Tokyo

hagiwara@epistat.m.u-tokyo.ac.jp

Supplementary Methods

Analysis of EQ-5D-5L index

We assessed the mean EQ-5D-5L indexes of the subgroups using an analysis of variance with the order of the EQ-5D-5L, each covariate, and their interaction as explanatory variables. The p-values for the interaction terms were calculated using the type three sum of squares.

Using analysis of variance with the EQ-5D-5L's order, performance status, age, sex, tumor type, hospitalization, and adverse events at enrollment as the additional explanatory variable, the differences in the mean EQ-5D-5L indexes between the groups were estimated.

We conducted analysis of variance weighted by the inverse probability of observing the EQ-5D-5L index in order to adjust the impact of the missing one. The probability was estimated using linear logistic model with the order of the EQ-5D-5L, performance status, age, sex, tumor type, hospitalization, and adverse events at enrollment as explanatory variables. The 95% confidence intervals were constructed based on a conservative robust sandwich variance estimator.

The Spearman rank correlation coefficients between the EQ-5D-5L index and the subscales of EORTC QLQ-C30 and FACT-G were computed in the EQF and QEF and the EFQ and FEQ groups, respectively. The differences in the correlation coefficients among the groups were calculated; the p-values were determined using the Fisher z-transformation.

Analysis of proportion of HRQOL with missing subscales

Using linear binomial regression (linear probability model) with the EQ-5D-5L's order, performance status, age, sex, hospitalization, and adverse events at enrollment as the additional explanatory variable, the differences in the proportions of those patients whose EQ-5D-5L were incomplete between the groups were estimated, although compared to multivariable analysis of EQ-5D-5L indexes, tumor type was not added to the model because it did not converge.

The differences in the proportions of the patients with any of the FACT-G subscales or its total score not calculated between the groups were estimated using linear binomial regression with the EQ-5D-5L's order as the explanatory variable.

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The differences in the proportions of the patients with any of the EORTC QLQ-C30 subscales not calculated between the groups were estimated using linear binomial regression with the EQ-5D-5L's order as the explanatory variable.

Supplementary Results

Table S1. Patient characteristics between the patients with complete and incomplete EQ-5D-5L.

Characteristic	Completed EQ-5D-5LN = 937	Incomplete EQ-5D-5LN = 92
Age (in years)	68 (58-74)	65 (53-74)
Sex		
Male	509 (54%)	44 (48%)
Female	428 (46%)	48 (52%)
Tumor type		
Lung cancer	329 (35%)	15 (16%)
Stomach cancer	66 (7%)	12 (13%)
Colorectal cancer	232 (25%)	28 (30%)
Breast cancer	116 (12%)	19 (21%)
Other solid tumors	194 (21%)	18 (20%)
Stage at diagnosis		
I	49 (5%)	5 (5%)
II	74 (8%)	4 (4%)
III	192 (20%)	20 (22%)
IV	610 (65%)	56 (61%)
Unknown	12 (1%)	7 (8%)
Site of metastasis or recurrence[a]		
None	83 (9%)	12 (13%)
Liver	211 (23%)	25 (27%)
Lung	296 (32%)	29 (32%)
Bone	169 (18%)	24 (26%)
Brain	100 (11%)	2 (2%)
Lymph nodes	373 (40%)	31 (34%)
Others	232 (25%)	23 (25%)
History of surgery		
Yes	497 (53%)	59 (64%)
No	439 (47%)	33 (36%)
Unknown	1 (0%)	0 (0%)
Hospitalization		
Yes	195 (21%)	23 (25%)

No	742 (79%)	69 (75%)
ECOG performance status		
0	464 (50%)	47 (51%)
1	385 (41%)	34 (37%)
2	67 (7%)	7 (8%)
3	20 (2%)	3 (3%)
Unknown (0, 1, 2, or 3)	1 (0%)	1 (1%)
Type of treatment[a]		
Chemotherapy	606 (65%)	62 (67%)
Endocrine therapy	67 (7%)	13 (14%)
Molecular targeted therapy	163 (17%)	4 (4%)
Immunotherapy	112 (12%)	9 (10%)
Palliative therapy	37 (4%)	5 (5%)
Others	8 (1%)	2 (2%)
Adverse event at enrollment		
Yes	606 (65%)	59 (64%)
No	329 (35%)	32 (35%)
Unknown	2 (0%)	1 (1%)

The median (IQR) and the number (%) were reported for age and other characteristics, respectively.

[a]Multiple choices were allowed.

ECOG, Eastern Cooperative Oncology Group; IQR, interquartile range.

Table S2. Responses to the five items in the EQ-5D-5L in Group 1, FEQ and QEF.

	Response level					vs Group 1	vs FEQ
	1	2	3	4	5		
Mobility							
Group 1	194 (65%)	51 (17%)	26 (9%)	23 (8%)	6 (2%)	–	–
FEQ	75 (50%)	45 (30%)	20 (13%)	8 (5%)	3 (2%)	0.015	–
QEF	71 (46%)	43 (28%)	21 (14%)	13 (8%)	7 (5%)	<0.001	0.266
Self-care							
Group 1	243 (81%)	28 (9%)	16 (5%)	8 (3%)	5 (2%)	–	–
FEQ	124 (82%)	17 (11%)	5 (3%)	4 (3%)	1 (1%)	0.686	–
QEF	118 (76%)	23 (15%)	7 (5%)	1 (1%)	6 (4%)	0.274	0.192
Usual activities							
Group 1	150 (50%)	92 (31%)	31 (10%)	22 (7%)	5 (2%)	–	–
FEQ	66 (44%)	55 (36%)	16 (11%)	10 (7%)	4 (3%)	0.308	–
QEF	56 (36%)	68 (44%)	16 (10%)	6 (4%)	9 (6%)	0.024	0.292
Pain/discomfort							
Group 1	122 (41%)	126 (42%)	39 (13%)	10 (3%)	3 (1%)	–	–
FEQ	55 (36%)	73 (48%)	16 (11%)	5 (3%)	2 (1%)	0.650	–
QEF	63 (41%)	67 (43%)	15 (10%)	7 (5%)	3 (2%)	0.961	0.649
Anxiety/depression							
Group 1	188 (63%)	85 (28%)	16 (5%)	7 (2%)	4 (1%)	–	–
FEQ	81 (54%)	51 (34%)	15 (10%)	3 (2%)	1 (1%)	0.064	–

QEF	88 (57%)	49 (32%)	9 (6%)	7 (5%)	2 (1%)	0.196	0.639

Group 1 consisted of the two questionnaire types that had the EQ-5D-5L in the first position.

FEQ and QEF stand for the questionnaire types containing the HRQOL instruments in the order of FACT-G > EQ-5D-5L > EORTC QLQ-C30 and EORTC QLQ-C30 > EQ-5D-5L > FACT-G, respectively.

Table S3. Covariate-adjusted least square mean differences in the EQ-5D-5L indexes among the three groups.

| | Difference (95% CI; P-value) | |
	vs Group 1	vs Group 2
Japanese value set		
Group 1	–	–
Group 2	−0.028 (−0.052, −0.003; 0.026)	–
Group 3	−0.007 (−0.031, 0.018; 0.59)	0.021 (−0.003, 0.045; 0.083)
England value set		
Group 1	–	–
Group 2	−0.021 (−0.048, 0.007; 0.135)	–
Group 3	0.001 (−0.026, 0.028; 0.929)	0.022 (−0.005, 0.049; 0.106)
US value set		
Group 1	–	–
Group 2	−0.028 (−0.062, 0.007; 0.112)	–
Group 3	−0.004 (−0.038, 0.030; 0.812)	0.024 (−0.010, 0.058; 0.166)

Groups 1, 2, and 3 comprised the two questionnaire types having the EQ-5D-5L in the first, second, and last places, respectively.

CI, confidence interval; US, the United States.

Table S4. Mean EQ-5D-5L indexes adjusted for the missing EQ-5D-5L index through an inverse probability weighting.

	Mean (95% CI)	Difference (95% CI; P-value)	
		vs Group 1	vs Group 2
Japanese value set			
Group 1	0.796 (0.774, 0.818)	–	–
Group 2	0.760 (0.739, 0.781)	−0.036 (−0.067, −0.006; 0.021)	–
Group 3	0.788 (0.771, 0.806)	−0.007 (−0.036, 0.021; 0.606)	0.029 (0.001, 0.056; 0.043)
England value set			
Group 1	0.820 (0.796, 0.844)	–	–
Group 2	0.790 (0.766, 0.815)	−0.029 (−0.064, 0.005; 0.096)	–
Group 3	0.821 (0.802, 0.841)	0.001 (−0.030, 0.033; 0.926)	0.031 (0.000, 0.062; 0.054)
US value set			
Group 1	0.783 (0.752, 0.813)	–	–
Group 2	0.744 (0.713, 0.775)	−0.039 (−0.082, 0.005; 0.082)	–
Group 3	0.778 (0.753, 0.803)	−0.004 (−0.044, 0.035; 0.829)	0.034 (−0.005, 0.074; 0.089)

Groups 1, 2, and 3 comprised the two questionnaire types that had the EQ-5D-5L in the first, second, and last places, respectively.

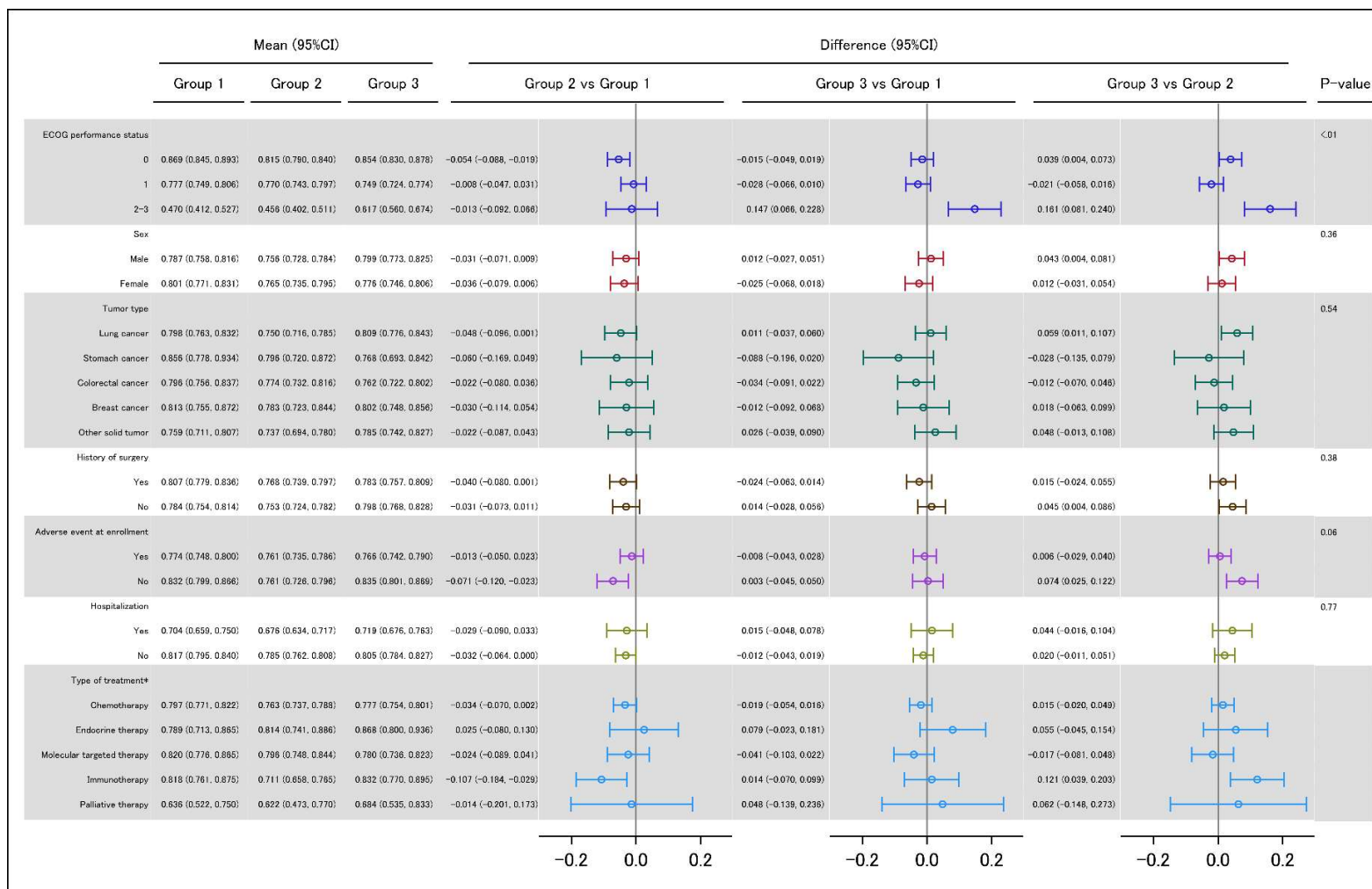CI, confidence interval; US, the United States.

	Mean (95%CI)			Difference (95%CI)			P-value
	Group 1	Group 2	Group 3	Group 2 vs Group 1	Group 3 vs Group 1	Group 3 vs Group 2	
ECOG performance status							<.01
0	0.869 (0.845, 0.893)	0.815 (0.790, 0.840)	0.854 (0.830, 0.878)	-0.054 (-0.088, -0.019)	-0.015 (-0.049, 0.019)	0.039 (0.004, 0.073)	
1	0.777 (0.749, 0.806)	0.770 (0.743, 0.797)	0.749 (0.724, 0.774)	-0.008 (-0.047, 0.031)	-0.028 (-0.066, 0.010)	-0.021 (-0.058, 0.016)	
2–3	0.470 (0.412, 0.527)	0.456 (0.402, 0.511)	0.617 (0.560, 0.674)	-0.013 (-0.092, 0.066)	0.147 (0.066, 0.228)	0.161 (0.081, 0.240)	
Sex							0.36
Male	0.787 (0.758, 0.816)	0.756 (0.728, 0.784)	0.799 (0.773, 0.825)	-0.031 (-0.071, 0.009)	0.012 (-0.027, 0.051)	0.043 (0.004, 0.081)	
Female	0.801 (0.771, 0.831)	0.765 (0.735, 0.795)	0.776 (0.746, 0.806)	-0.036 (-0.079, 0.006)	-0.025 (-0.068, 0.018)	0.012 (-0.031, 0.054)	
Tumor type							0.54
Lung cancer	0.798 (0.763, 0.832)	0.750 (0.716, 0.785)	0.809 (0.776, 0.843)	-0.048 (-0.096, 0.001)	0.011 (-0.037, 0.060)	0.059 (0.011, 0.107)	
Stomach cancer	0.856 (0.778, 0.934)	0.796 (0.720, 0.872)	0.768 (0.693, 0.842)	-0.060 (-0.169, 0.049)	-0.088 (-0.196, 0.020)	-0.028 (-0.135, 0.079)	
Colorectal cancer	0.796 (0.756, 0.837)	0.774 (0.732, 0.816)	0.762 (0.722, 0.802)	-0.022 (-0.080, 0.036)	-0.034 (-0.091, 0.022)	-0.012 (-0.070, 0.046)	
Breast cancer	0.813 (0.755, 0.872)	0.783 (0.723, 0.844)	0.802 (0.748, 0.856)	-0.030 (-0.114, 0.054)	-0.012 (-0.092, 0.068)	0.018 (-0.063, 0.099)	
Other solid tumor	0.759 (0.711, 0.807)	0.737 (0.694, 0.780)	0.785 (0.742, 0.827)	-0.022 (-0.087, 0.043)	0.026 (-0.039, 0.090)	0.048 (-0.013, 0.108)	
History of surgery							0.38
Yes	0.807 (0.779, 0.836)	0.768 (0.739, 0.797)	0.783 (0.757, 0.809)	-0.040 (-0.080, 0.001)	-0.024 (-0.063, 0.014)	0.015 (-0.024, 0.055)	
No	0.784 (0.754, 0.814)	0.753 (0.724, 0.782)	0.798 (0.768, 0.828)	-0.031 (-0.073, 0.011)	0.014 (-0.028, 0.056)	0.045 (0.004, 0.086)	
Adverse event at enrollment							0.06
Yes	0.774 (0.748, 0.800)	0.761 (0.735, 0.786)	0.766 (0.742, 0.790)	-0.013 (-0.050, 0.023)	-0.008 (-0.043, 0.028)	0.006 (-0.029, 0.040)	
No	0.832 (0.799, 0.866)	0.761 (0.726, 0.796)	0.835 (0.801, 0.869)	-0.071 (-0.120, -0.023)	0.003 (-0.045, 0.050)	0.074 (0.025, 0.122)	
Hospitalization							0.77
Yes	0.704 (0.659, 0.750)	0.676 (0.634, 0.717)	0.719 (0.676, 0.763)	-0.029 (-0.090, 0.033)	0.015 (-0.048, 0.078)	0.044 (-0.016, 0.104)	
No	0.817 (0.795, 0.840)	0.785 (0.762, 0.808)	0.805 (0.784, 0.827)	-0.032 (-0.064, 0.000)	-0.012 (-0.043, 0.019)	0.020 (-0.011, 0.051)	
Type of treatment*							
Chemotherapy	0.797 (0.771, 0.822)	0.763 (0.737, 0.788)	0.777 (0.754, 0.801)	-0.034 (-0.070, 0.002)	-0.019 (-0.054, 0.016)	0.015 (-0.020, 0.049)	
Endocrine therapy	0.789 (0.713, 0.865)	0.814 (0.741, 0.886)	0.868 (0.800, 0.936)	0.025 (-0.080, 0.130)	0.079 (-0.023, 0.181)	0.055 (-0.045, 0.154)	
Molecular targeted therapy	0.820 (0.776, 0.865)	0.796 (0.748, 0.844)	0.780 (0.736, 0.823)	-0.024 (-0.089, 0.041)	-0.041 (-0.103, 0.022)	-0.017 (-0.081, 0.048)	
Immunotherapy	0.818 (0.761, 0.875)	0.711 (0.658, 0.765)	0.832 (0.770, 0.895)	-0.107 (-0.184, -0.029)	0.014 (-0.070, 0.099)	0.121 (0.039, 0.203)	
Palliative therapy	0.636 (0.522, 0.750)	0.622 (0.473, 0.770)	0.684 (0.535, 0.833)	-0.014 (-0.201, 0.173)	0.048 (-0.139, 0.236)	0.062 (-0.148, 0.273)	

Fig. S1 Forest plot for the subgroup analysis of the mean EQ-5D-5L index based on the value set for Japan

Groups 1, 2, and 3 consisted of the two questionnaire types that had the EQ-5D-5L in the first, second, and last places, respectively.

CI, confidence interval; ECOG, Eastern Cooperative Oncology Group.

*Multiple choices were allowed; thus, the p-value for the interaction term was not calculated.

Table S5. Mean EQ-5D-5L indexes in Group 1, FEQ and QEF.

| | Mean (95% CI) | Difference (95% CI; P-value) | |
		vs Group 1	vs FEQ
Japanese value set			
Group 1	0.796 (0.776, 0.817)	–	–
FEQ	0.770 (0.741, 0.799)	−0.026(−0.062, 0.009; 0.146)	–
QEF	0.751 (0.722, 0.779)	−0.046(−0.081, −0.01; 0.011)	−0.019 (−0.060, 0.022; 0.352)
England value set			
Group 1	0.821 (0.798, 0.844)	–	–
FEQ	0.805 (0.772, 0.837)	−0.016 (−0.056, 0.024; 0.427)	–
QEF	0.777 (0.745, 0.809)	−0.044 (−0.084, −0.004; 0.031)	−0.028 (−0.074, 0.018; 0.238)
US value set			
Group 1	0.784 (0.754, 0.813)	–	–
FEQ	0.761 (0.720, 0.802)	−0.022 (−0.073, 0.028; 0.385)	–
QEF	0.727 (0.687, 0.768)	−0.056 (−0.106, −0.006; 0.028)	−0.034 (−0.092, 0.024; 0.254)

Group 1 contained the two questionnaire types that had the EQ-5D-5L in the first position.

FEQ and QEF indicate the questionnaire types containing the HRQOL instruments in the order of FACT-G > EQ-5D-5L > EORTC QLQ-C30 and EORTC QLQ-C30 > EQ-5D-5L > FACT-G, respectively.

CI, confidence interval; US, the United States.

Table S6. Rank correlation between the EORTC QLQ-C30 and the FACT-G subscales and the EQ-5D-5L index based on the Japanese value set.

	EORTC QLQ-C30 analysis			FACT-G analysis		
	EQF	QEF	Difference (P-value)	EFQ	FEQ	Difference (P-value)
EORTC QLQ-C30						
Physical functioning	0.75	0.71	0.04 (0.437)	–	–	–
Role functioning	0.79	0.69	0.11 (0.042)	–	–	–
Emotional functioning	0.41	0.39	0.02 (0.844)	–	–	–
Cognitive functioning	0.41	0.48	−0.07 (0.433)	–	–	–
Social functioning	0.55	0.55	−0.01 (0.927)	–	–	–
Global health status	0.66	0.57	0.09 (0.215)	–	–	–
Fatigue	−0.71	−0.66	−0.06 (0.351)	–	–	–
Nausea and vomiting	−0.27	−0.32	0.05 (0.638)	–	–	–
Pain	−0.63	−0.57	−0.07 (0.376)	–	–	–
Dyspnea	−0.44	−0.46	0.02 (0.844)	–	–	–
Insomnia	−0.44	−0.34	−0.10 (0.299)	–	–	–
Appetite loss	−0.42	−0.4	−0.02 (0.853)	–	–	–
Constipation	−0.29	−0.23	−0.05 (0.617)	–	–	–
Diarrhea	−0.12	−0.18	0.06 (0.599)	–	–	–
Financial difficulties	−0.38	−0.33	−0.05 (0.616)	–	–	–
FACT-G						
Physical well-being	–	–	–	0.73	0.69	0.04 (0.525)
Social/family well-being	–	–	–	0.09	0.07	0.02 (0.861)

Emotional well-being	–	–	–	0.55	0.47	0.08 (0.364)
Functional well-being	–	–	–	0.61	0.55	0.07 (0.397)

EQF, QEF, EFQ, and FEQ stand for the questionnaire type containing the HRQOL instruments in the order of EQ-5D-5L > EORTC QLQ-C30 > FACT-G, EORTC QLQ-C30 > EQ-5D-5L > FACT-G, EQ-5D-5L > FACT-G > EORTC QLQ-C30, and FACT-G > EQ-5D-5L > EORTC QLQ-C30, respectively.

EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30; FACT-G, Functional Assessment of Cancer Therapy General.

Table S7. Rank correlation between the EORTC QLQ-C30 and the FACT-G subscales and the mobility question in the EQ-5D-5L.

	EORTC QLQ-C30 analysis			FACT-G analysis		
	EQF	QEF	Difference (P-value)	EFQ	FEQ	Difference (P-value)
EORTC QLQ-C30						
Physical functioning	−0.69	−0.68	0.00 (0.938)	–	–	–
Role functioning	−0.67	−0.56	−0.11 (0.113)	–	–	–
Emotional functioning	−0.19	−0.16	−0.02 (0.835)	–	–	–
Cognitive functioning	−0.31	−0.33	0.02 (0.828)	–	–	–
Social functioning	−0.43	−0.41	−0.02 (0.871)	–	–	–
Global health status	−0.53	−0.45	−0.08 (0.379)	–	–	–
Fatigue	0.54	0.53	0.02 (0.838)	–	–	–
Nausea and vomiting	0.23	0.31	−0.08 (0.472)	–	–	–
Pain	0.43	0.37	0.06 (0.528)	–	–	–
Dyspnea	0.39	0.37	0.03 (0.776)	–	–	–
Insomnia	0.32	0.26	0.06 (0.570)	–	–	–
Appetite loss	0.31	0.34	−0.03 (0.804)	–	–	–
Constipation	0.26	0.12	0.14 (0.213)	–	–	–
Diarrhea	0.02	0.22	−0.20 (0.071)	–	–	–
Financial difficulties	0.25	0.2	0.05 (0.629)	–	–	–
FACT-G						
Physical well-being	–	–	–	−0.51	−0.5	−0.01 (0.890)
Social/family well-being	–	–	–	−0.08	−0.17	0.09 (0.462)
Emotional well-being	–	–	–	−0.23	−0.14	−0.08 (0.467)

| Functional well-being | – | – | – | −0.4 | −0.43 | 0.03 (0.782) |

EQF, QEF, EFQ, and FEQ indicate the questionnaire types containing the HRQOL instruments in the order of EQ-5D-5L > EORTC QLQ-C30 > FACT-G, EORTC QLQ-C30 > EQ-5D-5L > FACT-G, EQ-5D-5L > FACT-G > EORTC QLQ-C30, and FACT-G > EQ-5D-5L > EORTC QLQ-C30, respectively.

EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30; FACT-G, Functional Assessment of Cancer Therapy General.

Table S8. Rank correlation between the EORTC QLQ-C30 and the FACT-G subscales and the self-care question in the EQ-5D-5L.

	EORTC QLQ-C30 analysis			FACT-G analysis		
	EQF	QEF	Difference (P-value)	EFQ	FEQ	Difference (P-value)
EORTC QLQ-C30						
Physical functioning	−0.59	−0.37	−0.22 (0.012)	–	–	–
Role functioning	−0.51	−0.44	−0.08 (0.397)	–	–	–
Emotional functioning	−0.19	−0.17	−0.02 (0.835)	–	–	–
Cognitive functioning	−0.26	−0.34	0.08 (0.457)	–	–	–
Social functioning	−0.35	−0.37	0.02 (0.842)	–	–	–
Global health status	−0.47	−0.33	−0.14 (0.143)	–	–	–
Fatigue	0.43	0.31	0.13 (0.195)	–	–	–
Nausea and vomiting	0.11	0.21	−0.11 (0.341)	–	–	–
Pain	0.36	0.35	0.01 (0.892)	–	–	–
Dyspnea	0.27	0.19	0.08 (0.477)	–	–	–
Insomnia	0.27	0.3	−0.03 (0.811)	–	–	–
Appetite loss	0.19	0.25	−0.06 (0.590)	–	–	–
Constipation	0.22	0.15	0.08 (0.487)	–	–	–
Diarrhea	−0.02	0.14	−0.16 (0.153)	–	–	–
Financial difficulties	0.27	0.16	0.12 (0.285)	–	–	–
FACT-G						
Physical well-being	–	–	–	−0.38	−0.38	−0.01 (0.955)
Social/family well-being	–	–	–	−0.06	−0.11	0.04 (0.711)
Emotional well-being	–	–	–	−0.25	−0.18	−0.08 (0.505)

| Functional well-being | – | – | – | −0.35 | −0.37 | 0.02 (0.843) |

EQF, QEF, EFQ, and FEQ indicate the questionnaire types containing the HRQOL instruments in the order of EQ-5D-5L > EORTC QLQ-C30 > FACT-G, EORTC QLQ-C30 > EQ-5D-5L > FACT-G, EQ-5D-5L > FACT-G > EORTC QLQ-C30, and FACT-G > EQ-5D-5L > EORTC QLQ-C30, respectively.

EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30; FACT-G, Functional Assessment of Cancer Therapy General.

Table S9. Rank correlation between the EORTC QLQ-C30 and the FACT-G subscales and the usual activities question in the EQ-5D-5L.

	EORTC QLQ-C30 analysis			FACT-G analysis		
	EQF	QEF	Difference (P-value)	EFQ	FEQ	Difference (P-value)
EORTC QLQ-C30						
Physical functioning	−0.75	−0.66	−0.09 (0.110)	–	–	–
Role functioning	−0.84	−0.74	−0.10 (0.015)	–	–	–
Emotional functioning	−0.29	−0.33	0.04 (0.681)	–	–	–
Cognitive functioning	−0.41	−0.41	0.00 (1.000)	–	–	–
Social functioning	−0.53	−0.52	−0.01 (0.868)	–	–	–
Global health status	−0.65	−0.51	−0.14 (0.058)	–	–	–
Fatigue	0.68	0.64	0.04 (0.529)	–	–	–
Nausea and vomiting	0.28	0.3	−0.02 (0.859)	–	–	–
Pain	0.55	0.44	0.11 (0.189)	–	–	–
Dyspnea	0.4	0.48	−0.07 (0.441)	–	–	–
Insomnia	0.38	0.23	0.15 (0.162)	–	–	–
Appetite loss	0.38	0.36	0.02 (0.821)	–	–	–
Constipation	0.25	0.19	0.06 (0.594)	–	–	–
Diarrhea	0.12	0.12	0.00 (1.000)	–	–	–
Financial difficulties	0.43	0.33	0.09 (0.353)	–	–	–
FACT-G						
Physical well-being	–	–	–	−0.68	−0.6	−0.08 (0.280)
Social/family well-being	–	–	–	0.04	−0.02	0.05 (0.667)

Emotional well-being	–	–	–	−0.4	−0.32	−0.08 (0.446)
Functional well-being	–	–	–	−0.51	−0.55	0.04 (0.665)

EQF, QEF, EFQ, and FEQ denote the questionnaire types containing the HRQOL instruments in the order of EQ-5D-5L > EORTC QLQ-C30 > FACT-G, EORTC QLQ-C30 > EQ-5D-5L > FACT-G, EQ-5D-5L > FACT-G > EORTC QLQ-C30, and FACT-G > EQ-5D-5L > EORTC QLQ-C30, respectively.

EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30; FACT-G, Functional Assessment of Cancer Therapy General.

Table S10. Rank correlation between the EORTC QLQ-C30 and the FACT-G subscales and the pain/discomfort question in the EQ-5D-5L.

	EORTC QLQ-C30 analysis			FACT-G analysis		
	EQF	QEF	Difference (P-value)	EFQ	FEQ	Difference (P-value)
EORTC QLQ-C30						
Physical functioning	−0.49	−0.37	−0.11 (0.228)	–	–	–
Role functioning	−0.51	−0.41	−0.10 (0.272)	–	–	–
Emotional functioning	−0.37	−0.29	−0.08 (0.429)	–	–	–
Cognitive functioning	−0.36	−0.37	0.02 (0.864)	–	–	–
Social functioning	−0.4	−0.29	−0.11 (0.297)	–	–	–
Global health status	−0.52	−0.46	−0.06 (0.493)	–	–	–
Fatigue	0.61	0.43	0.19 (0.027)	–	–	–
Nausea and vomiting	0.22	0.19	0.03 (0.766)	–	–	–
Pain	0.74	0.71	0.04 (0.487)	–	–	–
Dyspnea	0.39	0.36	0.03 (0.800)	–	–	–
Insomnia	0.5	0.29	0.21 (0.031)	–	–	–
Appetite loss	0.47	0.37	0.11 (0.269)	–	–	–
Constipation	0.19	0.25	−0.05 (0.627)	–	–	–
Diarrhea	0.1	0.11	−0.01 (0.925)	–	–	–
Financial difficulties	0.28	0.26	0.02 (0.825)	–	–	–
FACT-G						
Physical well-being	–	–	–	−0.67	−0.58	−0.09 (0.196)
Social/family well-being	–	–	–	0	−0.12	0.12 (0.302)

Emotional well-being	–	–	–	−0.45	−0.37	−0.08 (0.427)
Functional well-being	–	–	–	−0.46	−0.37	−0.09 (0.350)

EQF, QEF, EFQ, and FEQ indicate the questionnaire types containing the HRQOL instruments in the order of EQ-5D-5L > EORTC QLQ-C30 > FACT-G, EORTC QLQ-C30 > EQ-5D-5L > FACT-G, EQ-5D-5L > FACT-G > EORTC QLQ-C30, and FACT-G > EQ-5D-5L > EORTC QLQ-C30.

EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30; FACT-G, Functional Assessment of Cancer Therapy General.

Table S11. Rank correlation between the EORTC QLQ-C30 and the FACT-G subscales and the anxiety/depression question in the EQ-5D-5L.

	EORTC QLQ-C30 analysis			FACT-G analysis		
	EQF	QEF	Difference (P-value)	EFQ	FEQ	Difference (P-value)
EORTC QLQ-C30						
Physical functioning	−0.26	−0.26	0.00 (0.994)	–	–	–
Role functioning	−0.28	−0.22	−0.07 (0.544)	–	–	–
Emotional functioning	−0.52	−0.45	−0.07 (0.419)	–	–	–
Cognitive functioning	−0.23	−0.32	0.09 (0.397)	–	–	–
Social functioning	−0.33	−0.33	0.00 (0.982)	–	–	–
Global health status	−0.34	−0.28	−0.07 (0.530)	–	–	–
Fatigue	0.3	0.34	−0.04 (0.664)	–	–	–
Nausea and vomiting	0.14	0.23	−0.09 (0.423)	–	–	–
Pain	0.29	0.26	0.02 (0.831)	–	–	–
Dyspnea	0.2	0.23	−0.03 (0.782)	–	–	–
Insomnia	0.27	0.19	0.08 (0.476)	–	–	–
Appetite loss	0.2	0.22	−0.02 (0.892)	–	–	–
Constipation	0.26	0.23	0.03 (0.778)	–	–	–
Diarrhea	0.08	0.05	0.03 (0.796)	–	–	–
Financial difficulties	0.21	0.28	−0.08 (0.487)	–	–	–
FACT-G						
Physical well-being	–	–	–	−0.52	−0.48	−0.04 (0.643)
Social/family well-being	–	–	–	−0.15	0.01	−0.16 (0.175)

Emotional well-being	–	–	–	−0.68	−0.63	−0.05 (0.499)
Functional well-being	–	–	–	−0.51	−0.31	−0.20 (0.044)

EQF, QEF, EFQ, and FEQ denote the questionnaire types containing the HRQOL instruments in the order of EQ-5D-5L > EORTC QLQ-C30 > FACT-G, EORTC QLQ-C30 > EQ-5D-5L > FACT-G, EQ-5D-5L > FACT-G > EORTC QLQ-C30, and FACT-G > EQ-5D-5L > EORTC QLQ-C30, respectively.

EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30; FACT-G, Functional Assessment of Cancer Therapy General.

Table S12. Covariate-adjusted least square mean differences in proportions of the incomplete EQ-5D-5L among the three groups.

	Difference (95% CI; P-value)	
	vs Group 1	vs Group 2
Incomplete EQ-5D-5L for any reasons		
Group 1	–	–
Group 2	0.00 (−0.04, 0.05; 0.922)	–
Group 3	−0.05 (−0.09, −0.02; 0.007)	−0.06 (−0.10, −0.02; 0.006)

Groups 1, 2, and 3 contained the two questionnaire types that had the EQ-5D-5L in the first, second, and last places, respectively.

CI, confidence interval.

Table S13. Proportions of the FACT-G with missing subscales in the three groups.

| | Proportion (95% CI) | Difference (95% CI; P-value) | |
		vs Group 1	vs Group 2
FACT-G with any of the four subscales or its total score missing for any reasons			
Group 1	0.12 (0.09, 0.16)	–	–
Group 2	0.11 (0.07, 0.14)	−0.02 (−0.07, 0.03; 0.487)	–
Group 3	0.06 (0.03, 0.08)	−0.07 (−0.11, −0.02; 0.002)	−0.05 (−0.09, −0.01; 0.016)
Did not return to the data center			
Group 1	0.05 (0.03, 0.08)	–	–
Group 2	0.06 (0.04, 0.09)	0.01 (−0.03, 0.04; 0.668)	–
Group 3	0.02 (0.01, 0.04)	−0.03 (−0.06, 0.00; 0.038)	−0.04 (−0.07, −0.01; 0.012)
Returned the questionnaire without any response			
Group 1	0.02 (0.00, 0.03)	–	–
Group 2	0.02 (0.01, 0.04)	0.01 (−0.02, 0.03; 0.616)	–
Group 3	0.01 (0.00, 0.03)	0.00 (−0.02, 0.02; 0.721)	−0.01 (−0.03, 0.01; 0.390)
FACT-G with any of the four subscales or its total score missing with some responses to the returned questionnaire			
Group 1	0.05 (0.03, 0.08)	–	–
Group 2	0.02 (0.01, 0.04)	−0.03 (−0.06, 0.00; 0.040)	–
Group 3	0.02 (0.01, 0.03)	−0.03 (−0.06, −0.01; 0.021)	0.00 (−0.02, 0.02; 0.777)

Groups 1, 2, and 3 contained the two questionnaire types that had the EQ-5D-5L in the first, second, and last places, respectively.

CI, confidence interval; FACT-G, Functional Assessment of Cancer Therapy General.

Table S14. Proportions of the EORTC QLQ-C30 with missing subscale in the three groups.

	Proportion (95% CI)	Difference (95% CI; P-value)	
		vs Group 1	vs Group 2
EORTC QLQ-C30 with any of the fifteen subscales missing for any reasons			
Group 1	0.13 (0.09, 0.16)	–	–
Group 2	0.13 (0.09, 0.16)	0.00 (−0.05, 0.05; 0.919)	–
Group 3	0.06 (0.03, 0.08)	−0.07 (−0.11, −0.03; 0.001)	−0.07 (−0.11, −0.02; 0.002)
Did not return to the data center			
Group 1	0.05 (0.03, 0.08)	–	–
Group 2	0.06 (0.04, 0.09)	0.01 (−0.03, 0.04; 0.668)	–
Group 3	0.02 (0.01, 0.04)	−0.03 (−0.06, 0.00; 0.038)	−0.04 (−0.07, −0.01; 0.012)
Returned the questionnaire without any response			
Group 1	0.02 (0.00, 0.03)	–	–
Group 2	0.02 (0.01, 0.04)	0.01 (−0.02, 0.03; 0.616)	–
Group 3	0.01 (0.00, 0.03)	0.00 (−0.02, 0.02; 0.721)	−0.01 (−0.03, 0.01; 0.390)
EORTC QLQ-C30 with any of the fifteen subscales missing with some responses to the returned questionnaire			
Group 1	0.06 (0.03, 0.08)	–	–
Group 2	0.04 (0.02, 0.06)	−0.02 (−0.05, 0.02; 0.341)	–
Group 3	0.02 (0.01, 0.03)	−0.04 (−0.06, −0.01; 0.013)	−0.02 (−0.05, 0.00; 0.115)

Groups 1, 2, and 3 contained the two questionnaire types that had the EQ-5D-5L in the first, second, and last places, respectively.

CI, confidence interval.