

Supplemental Material 5

Regression Model with Alternative QUALIDEM-Score

A limitation of the QUALIDEM total score is how it is calculated for patients with very severe dementia. As recommended by the authors of QUALIDEM, only six of the nine subscales are used to calculate the total score [1]. Technically speaking, this is similar to simple mean value imputation of the missing scores for the three omitted subscales, resulting in biased and underestimated measurement error variance for this group. In order to see to which extent an alternative computation of the QUALIDEM total score might be more appropriate than the recommended approach, we calculated another regression model (called “New Model”, see *Table S4*). This model used a QUALIDEM total score based on full imputation of missing values for *all nine* subscales for patients with very severe dementia (instead of only using six subscales).

Table S4 shows the result of the new model in comparison to the main model presented in the manuscript. Both results for the estimates as well as standard error and HDI are very similar. This suggests that in our particular case we found no improvement in the estimation accuracy after imputing the missing values for the originally omitted three subscales for people with very severe dementia. Still it might be statistically more sound to either have the same amount of subscales for all groups of dementia severity or to consider appropriate missing data imputation algorithms for the group with very severe dementia. Thus, future research in QoL for patients with dementia should also focus on the reliability and validity of the QUALIDEM.

Table S4: Comparison of Models for two different QoL-Scores

Term	New Model with full imputed QoL-Score for very severe dementia			Main Model		
	Estimate	SE	89% HDI	Estimate	SE	89% HDI
Length of Stay	-0.0	0.1	-0.2 – 0.1	-0.1	0.1	-0.2 – 0.1
Age	0.8	0.5	-0.0 – 1.6	1.2	0.5	0.4 – 2.1
Moderate Dementia	1.1	1.9	-1.8 – 4.1	1.2	2.0	-1.8 – 4.6
Severe Dementia	-0.3	1.9	-3.2 – 2.7	-0.4	2.0	-3.6 – 2.7
Female	0.6	1.0	-1.0 – 2.2	0.2	1.1	-1.6 – 1.9
Barthel Score	2.0	0.4	1.3 – 2.7	2.0	0.5	1.3 – 2.8
Physical Restraints (yes)	-4.1	1.3	-6.1 – -2.1	-4.9	1.2	-7.0 – -2.8
Special Care Ward (Intervention)	5.2	1.1	3.4 – 6.9	5.7	1.2	3.8 – 7.6
PAS-Score	-2.7	0.2	-3.0 – -2.4	-2.9	0.2	-3.2 – -2.7
Charlson's Comorbidity Index	0.0	0.3	-0.5 – 0.5	-0.1	0.3	-0.6 – 0.5
Psychotropic Drug Use (yes, as-needed)	-4.3	1.3	-6.3 – -2.3	-4.4	1.4	-6.5 – -2.1

All Rhat values ~ 1, all mcse < 0.05. Results based on 4 chains each 1000 iterations for each chain.

1 Dichter MN, Quasdorf T, Schwab CGG, et al. Dementia care mapping: effects on residents' quality of life and challenging behavior in German nursing homes. A quasi-experimental trial. *International Psychogeriatrics* 2015;27:1875–92.
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