Supplementary Material Appendix A

Validity Information for FICS (Family Inpatient Communication Survey)

Source	Validity Information
(Torke et al., 2016)	• Confirmatory factor analysis on two-factor model showed comparative fit index (CFI = 0.984) and root mean square error of approximation (RMSEA = 0.055), indicating good fit on factorial validity. • In the baseline, the correlation between FICS and the DCS (Decisional Conflict Scale) was -0.39 ($p < 0.001$), indicating weak discriminant and concurrent validity of communication and decision conflict. • In 6-8 weeks follow-up, the correlation between FICS and the PHQ-9 (Patient Health Questionnaire-9)/GAD-7 (Generalized Anxiety Disorder-7) was -0.13 ($p = 0.019$)/-0.14 ($p = 0.012$), indicating weak discriminant and predictive validity of communication and psychological distress. • In 6-8 weeks follow-up, FICS correlated 0.45 ($p < 0.001$) with the overall satisfaction, indicating weak predictive and convergent validity of communication on family satisfaction.
(Torke et al., 2018)	• In 6-8 weeks follow-up, FICS-emotional support subscale was associated with lower odds of GAD-7 score (OR = 0.65; 95% CI [0.50, 0.85]), indicating communication on anxiety reduction. • At 6-8 weeks follow-up, FICS-emotional support subscale was associated with lower odds of PHQ-9 score (OR = 0.8; 95% CI [0.65, 0.99]), indicating communication on depression reduction. • At 6-8 weeks follow-up, the coefficient correlation between FICS-information subscale and satisfaction was 0.61 ($p < 0.001$), indicating moderate convergent validity of communication with satisfaction. • At 6-8 weeks follow-up, the coefficient correlation between FICS-emotional support subscale and the Horowitz Impact of Event Scale-Revised (IES-R) was -0.3 ($p = 0.0034$), indicating weak discriminant validity of communication with post-traumatic stress.

Supplementary Material Appendix B

Validity Information for FPPFC

Source	Validity Information
(Biola et al., 2007)	• FPPFC significantly correlated 0.263 ($p = 0.006$) with the understanding that death was imminent, indicating weak convergent validity of communication with understanding prognosis. • FPPFC significantly correlated 0.545 ($p < 0.001$) with the frequency of face-to-face communication with physicians, indicating moderate predictive validity of the number of conversation with perception of communication. • The scores of FPPFC vary between daughters/daughters-in-law and other relatives and between nursing homes and residential care/assisted living facilities, indicating affective and environmental factor mismatches.
(Liu, Guarino, & Lopez, 2012)	• FPPFC significantly correlated 0.68 ($p <0.001$) with SWC-EOLD – SWC (End of Life in Dementia – Satisfaction with Care), indicating moderate convergent validity of communication with satisfaction.
(Zimmerman et al., 2015)	• FPPFC correlated 0.14 ($p = 0.05$) with MSSE (Mini-Suffering State Examination), 0.18 ($p = 0.01$) with EOLD-CAD (End-of-Life in Dementia – Comfort Assessment in Dying), and 0.18 ($p = 0.01$) with EOLD-SM (End-of-Life in Dementia – Symptom Management) indicating very weak convergent validity of communication with suffering. • FPPFC correlated 0.64 ($p = 0.01$) with FATE-S (Family Assessment of Treatment at the End-of-Life-Short version), and 0.57 ($p = 0.01$) with EOLD-SWC (End-of-Life in Dementia – Satisfaction with Care) indicating moderate convergent validity of communication with end-of-life treatment. • Confirmatory factor analysis showed normal fit index (NFI = 0.89) and root mean square error of approximation (RMSEA = 0.06), indicating good fit on factorial validity.
(Van Soest-Poortvliet et al., 2012)	• FPPFC correlated 0.4 with the overall assessment of quality of care, indicating weak convergent validity of communication with quality of care. • FPPFC correlated 0.52 with EOLD-SWC, indicating moderate convergent validity of communication with satisfaction. • FPPFC correlated 0.39 with FATE-S, indicating weak convergent validity of communication with end-of-life treatment. • FPPFC correlated 0.66 with FPCS (Family Perceptions of Care Scale), indicating moderate convergent validity of communication with care.
(Cohen et al., 2012)	• There was no systematic difference in the scores of FPPFC between United States and Netherlands, indicating cross-respondent validity ($p = 0.15$).
(Sloane, Zimmerman,	• The scores of FPPFC (mean score 1.78 vs. 2.19 in residential care-assistant living / 1.52 vs. 1.01 in nursing home) vary between patients

Williams, & Hanson, 2008)	with and without dementia ($p = 0.035$), and between residential care/assisted living facilities and nursing homes ($p = 0.009$), indicating cognitive and environmental factor mismatches. • Compared to nursing home, family members of residential care-assistant living residents were more likely to meet face to face with the physician (79% vs. 62%, $p = 0.01$) and were more often familiar with the resident's physician (95% vs. 84%, $p = 0.015$).
Boogaard et al. (2017)	• FPPFC was positively associated with family caregivers' trust in physicians (coefficient 0.47, $p = 0.000$), indicating moderate convergent validity of communication with trust.

Supplementary Material Appendix C

Validity Information for QOC (Quality of Communication)

Source	Validity Information
(Engelberg, Downey, & Curtis, 2006)	- QOC-GEN scores significantly correlated with (a) overall quality of doctor's communication (0.74), (b) overall quality of discussion about EOL care (0.64), and (c) overall quality of care (0.54), indicating from weak to strong convergent validity. - QOC-EOL scores significantly correlated with (a) number of discussions with doctor about EOL care (0.51) and (b) doctor's awareness of patient's treatment preference (0.39) indicating from weak to strong convergent validity. - QOC-GEN scores significantly correlated with (a) number of discussions with doctor about EOL care (0.22) and (b) doctor's awareness of patient's treatment preference (0.23 indicating from weak to strong discriminant validity. - QOC-EOL scores significantly correlated with (a) overall quality of doctor's communication (0.27), and (b) overall quality of discussion about EOL care (0.43), indicating from weak to moderate discriminant validity. - Both hospice patients' and COPD patients' family members rating of the quality of overall care didn't predict QOC-EOL scores ($p < 0.01$), indicating the cross-respondent comparisons validity. - QOC-communication about EOL care subscale more significantly correlated with EOL discussion than QOC-general communication skills subscale, indicating discriminant construct validity. - Confirmatory factor analysis on two-factor model included good factor convergence (value ≥ 0.63) and discrimination (value different ≥ 0.25), percent of variance explained (69.3%).
(Toles, Song, Lin, & Hanson, 2018)	Family rating of QOC with nursing home staff was higher than that with clinicians (5.5 [1.7] vs. 3.7 [3.0] for overall QOC, 8.4 [1.7] vs. 5.6 [4.3] for general communication subscale, and 3 [2.3] vs. 2 [2.5] for end-of-life communication subscale), indicating effective validity that clinicians failed to communicate with the family members about EOL care.
(Jo et al., 2017)	QOC scale was back translated from English to Korean version with cognitive interviews on Korean version, indicating content validity (comprehension of test content).
(Dickson, Engelberg, Back, Ford, & Curtis, 2012)	Family ratings of QOC were significantly negatively associated with the trainees' self-ratings of perceived competence at communication (-0.31 for QOC-EOL and -.21 for QOC-GEN), indicating trainees failed to communicate with the family members (effective validity).
(Long et al., 2014)	QOC-general communication skills scores negatively correlated with a racial/ethnic minority group (-0.57, $p = 0.009$); QOC-communication about EOL care scores negatively correlated with a lower educational attainment (-0.69, $p < 0.001$), indicating shared context (socioeconomic

	backgrounds) decreasing construct validity and indicating trainees failed to communicate with family members who are non-white or lower educational attainment.
(Smith-Howell, Hickman, Meghani, Perkins, & Rawl, 2016)	• QOC-general communication skills negatively correlated with the Ottawa Decision Support (ODS) Decisional Conflict Scale, indicating discriminant validity (0.48, p = 0.03). • QOC-communication about EOL care negatively correlated with the Ottawa Decision Support (ODS) Decisional Conflict Scale, indicating discriminant validity (0.54, p = 0.014).
(White et al., 2018)	• The surrogates' mean QOC score was better in the intervention group than in the control group (69.7 vs. 63; p = 0.001), indicating effective validity. • The higher QOC score in the intervention group was associated with the shorter length of ICU/hospital stay (p = 0.045), indicating predictive validity.
(Cox et al., 2012)	• The surrogates' mean QOC score was better in the intervention group than in the control group (8.7 vs. 8.4; p = 0.03), indicating effective validity. • The higher QOC score in the intervention group was associated with the lower hospital costs (p = 0.044), indicating predictive validity.
Castanhel & Grosseman (2017)	• QOC scale was translated to Brazilian Portuguese and back translated Brazilian Portuguese to English by two Brazilian translators fluent in English, indicating content validity (comprehension of test content).
Cox et al. (2017)	• The surrogates' mean QOC score was better in the intervention group than in the control group (difference, 0.9 [1.6]), indicating effective validity. • The higher QOC score in the intervention group was associated with the shorter hospital length of stay (p < 0.05), indicating predictive validity.
Cox et al. (2019)	• The surrogates' mean QOC score was not significantly better in the intervention group than in the control group (87.8 vs. 83.4, p = 0.149), indicating the intervention failed to communicate with the surrogates.
Nadig et al. (2016)	• Family perceived QOC was independent from Hospital Anxirty and Depression Scale (HADS) for anxiety (-0.04) and Posttraumatic Stress Scale (0.03), indicating the violation of discriminant validity.
Huff et al. (2015)	• Family perceived QOC was positively associated with the Human Connection Scale (HCS) for therapeutic alliance to assess the caregiver-ICU clinician relationship (0.78, p < 0.05), indicating strong convergent validity.