# SUPPLEMENT

Table 1. Display of missing data

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| --- | --- |
|  | Cases with missing data (%) |
| Independent variables | N | (%) of total sample (n=1298) | (%) of subgroup sample who received palliative care (n=737) |
| Age | 54  | (4.2) | (7.3) |
| Sex | 47  | (3.6) | (6.4) |
| Length of stay | 66  | (5.1) | (9.0) |
| Cancer diagnosis | 43  | (3.3) | (5.8) |
| Dementia | 6  | (0.5) | (0.8) |
| LTCF type | 0 | (0) | (0) |
| No. FTE care staff / No. occupied beds | 78  | (6.0) | (10.6) |
| Specific written guidelines regarding palliative care | 73  | (5.6) | (9.9) |
| Case manager for residents with palliative care needs | 52  | (4.0) | (7.1) |
| Multidisciplinary meetings | 53 | (4.1) | (7.2) |
| Resident was capable of expressing his or her wishes at the time of admission | 14  | (1.1) | (1.9) |
| Resident expressed specific preferences about a medical treatment he/she did not want during the last phase of life | 11 | (0.8) | (1.5) |
| Resident gave power to a third party | 60  | (4.6) | (8.1) |
| Spoke with the resident about medical treatments or about the preferred course of care | 35  | (2.7) | (4.7) |
| A contact person was mentioned in the resident’s records | 46  | (3.5) | (6.2) |
| Country | 0  | (0) | (0) |
| **Dependent variables** |  |  |  |
| Resident received palliative care | 0 | (0) | - |
| Timing of initiating palliative care | 252  | - | (34.2) |
| Treating physician involvement in providing palliative care | 19  | - | (2.6) |
| Involvement of palliative care expert in providing palliative care | 98  | - | (13.3) |

Table 2. Palliative care provision in LTCFs and differences between countries, using multiple imputed datasets

|  |  |  |
| --- | --- | --- |
|  | **All Residents in sample n=1298** | **Residents who received palliative care (n=737)** |
| Country (N) | Received palliative care (yes)N(%) | Timing of initiating palliative care (days before death)Median (IQR)b | Treating physician provided palliative care (yes)N(%) | A palliative care expert was involved in the provision of palliative care (yes)N(%) |
| BE (281) | 219 (77.9) | 10.30 (6.10-28.80) | 183 (83.6) | 186 (84.9) |
| FI (262) | 191 (72.9) | 7.50 (4.00-17.80) | 136 (71.2) | 11 (5.8) |
| IT (193) | 62 (32.1) | 6.80 (4.45-14.63) | 48 (77.4) | 17 (27.4) |
| NL (220) | 168 (76.4) | 7.00 (3.15-14.00) | 166 (98.8) | 16 (9.5) |
| PL (258) | 36 (14.0) | 12.05 (6.93-38.30) | 30 (83.3) | 20 (55.6) |
| EN (84) | 61 (72.6) | 8.40 (4.30-24.60) | 46 (75.4) | 16 (26.2) |
| Overall p-values |  |  |  |  |
| Crude analysisa | <.001 | .004 | <.001 | <.001 |
| Adjusted analysis | <.001 | .002 | <.001 | <.001 |

IQR=interquartile range. Generalized Estimating Equations were used.
a: Median p-value was used as a measure of the pooled overall p-value 51.

b: Pooled median and IQR values were calculated as the mean of median and IQR in each imputed dataset.

Table 3. Factors associated with receiving palliative care, using multiple imputed datasets

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Received palliative care |  |  |  |  |  |
| Independent variables | Yes(n=737) | No(n=561) | UnivariableOR (95% CI)a  | p-value | MULTIVARIABLE OR (95% CI)b | p-value | OR for different countries (95%CI) [p-value]c | interaction term with country, p-value |
| Resident characteristics |  |  |  |  |  |  |  |  |
| Age, *>85* | 438 (59.4) | 284 (50.6) | 1.02 (0.78-1.32) | .891 |  |  |  |  |
| Sex, *female* | 486 (65.9) | 367 (65.4) | 1.03 (0.80-1.33) | .805 |  |  |  |  |
| Length of stay*, ≥1year* | 446 (60.5) | 299 (53.3) | 0.90 (0.66-1.22) | .498 |  |  |  |  |
| Cancer diagnosis, *yes* | 145 (19.7) | 68 (12.1) | 1.67 (1.12-2.49) | .012 | 1.82 (1.21-2.73) | .004 | PL: 5.71 (2.34-13.90) [<.001]EN: 3.53 (1.12-11.15) [.032]BE: 1.26 (0.56-2.83) [.580]NL: 1.38 (0.58-3.27 ) [.460]FI: 1.40 (0.64-3.03) [.399]IT: 1.41 (0.71-2.80) [.325] | .061 |
| Dementia, *yes* | 522 (70.8) | 382 (68.1) | 1.33 (1.04-1.71) | .023 | 1.42 (1.08-1.85) | .011 | - | .171 |
| Facility characteristics |  |  |  |  |  |  |  |  |
| LTCF type |  |  |  |  |  |  |  |  |
|  *LTCF on site day and night GPs and nurses* | 121 (16.4) | 189 (33.7) |  |  |  |  |  |  |
|  *LTCF onsite nurses offsite GPs* | 595 (80.7) | 356 (63.5) | 0.95 (0.53-1.69) | .861 |  |  |  |  |
|  *LTCF offsite nurses and GPs* | 21 (2.8) | 16 (2.9) | 0.23 (0.06-0.91) | .036 |  |  |  |  |
| No. care staff / 10. occupied beds*, >5.25*  | 370 (50.2) | 190 (33.9) | 1.22 (0.75-1.98) | .429 |  |  |  |  |
| Specific written guidelines regarding palliative care, *yes* | 500 (67.8) | 226 (40.3) | 1.02 (0.66-1.58) | .939 |  |  |  |  |
| Case manager/assigned contact person, *yes* | 599 (81.3) | 336 (59.9) | 1.52 (1.00-2.31) | .049 | 1.57 (1.02-2.40) | .038 | - | .248 |
| Multidisciplinary meetings, *yes* | 576 (78.2) | 420 (74.9) | 1.12 (0.68-1.83) | .661 |  |  |  |  |
| Advance care planning |  |  |  |  |  |  |  |  |
| Resident was capable of expressing his or her wishes at the time of admission |  |  |  |  |  |  |  |  |
|  *Yes* | 298 (40.4) | 177 (31.6) | 0.78 (0.55-1.11) | .170 |  |  |  |  |
|  *Partly* | 243 (33.0) | 180 (32.1) | 0.92 (0.64-1.31) | .633 |  |  |  |  |
|  *No* | 196 (26.6) | 204 (36.4) |  |  |  |  |  |  |
| Resident expressed specific preferencesabout a medical treatment he/she did not want during the last phase of life, *yes* | 216 (29.3) | 71 (12.7) | 1.29 (0.88-1.88) | .194 |  |  |  |  |
| Resident gave power to a third party, *yes* | 215 (29.2) | 158 (28.2) | 1.31 (0.97-1.78) | .077 |  |  |  |  |
| Spoke with the resident about medical treatments or about the preferred course of care, *yes* | 233 (31.6) | 103 (18.4) | 1.25 (0.90-1.75) | .186 |  |  |  |  |
| A contact person was mentioned in the resident’s records, *yes* | 683 (92.7) | 449 (80.0) | 2.29 (1.58-3.31) | <.001 | 2.28 (1.54-3.37) | <.001 | - | .601 |

OR= Odds Ratio, CI= Confidence Interval.
Logistic GEE analyses. Dependent variable: According to you, did the resident receive palliative care at any time? (0 – no, 1- yes).
Median p-value was used as a measure of the pooled overall p-values 51.

a: Association between dependent variable and independent variables separately, adjusted for country.
b: Association between dependent variable and independent variables in model built by backward selection, adjusted for country.

c: Association between dependent and independent variables in backwards model, including interaction term between country and independent variables identified in backward selection.

Table 4. Factors associated with timing of initiating palliative care, using multiple imputed datasets

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Independent variables | **Timing of initiating palliative care** (in days before death)Median (IQR) | Univariable Ratio (95% CI) a | p-value | Multivariable (backwards selection)Ratio (95% CI) b | p-value | Multivariable, ratio for different countriesRatio (95%CI) [p-value]c | Interaction term with country, p-value |
| Resident characteristics |  |  |  |  |  |  |  |
| Age, *≤85* | 9.90 (4.20-19.45) |  |  |  |  |  |  |
|  *>85* | 7.70 (4.10-18.63) | 0.96 (0.80-1.15) | .628 |  |  |  |  |
| Sex, *male* | 8.40 (4.20-24.58) |  |  |  |  |  |  |
|   *female* | 8.30 (4.30-16.90) | 0.95 (0.80-1.13) | .547 |  |  |  |  |
| Length of stay, *<1 year* | 7.30 (4.03-15.18) |  |  |  |  |  |  |
|   *≥1year* | 9.75 (4.60-23.38) | 1.15 (0.95-1.38) | .144 |  |  |  |  |
| Cancer diagnosis, *no* | 7.75 (4.20-17.88) |  |  |  |  |  |  |
|   *yes* | 9.90 (4.13-23.28) | 1.11 (0.91-1.36) | .298 |  |  |  |  |
| Dementia, *no* | 9.95 (4.65-23.88) |  |  |  |  |  |  |
|  *yes* | 7.30 (4.10-18.05) | 0.89 (0.72-1.10) | .265 |  |  |  |  |
| Facility characteristics |  |  |  |  |  |  |  |
| LTCF type |  |  |  |  |  |  |  |
|  *Onsite physicians, nurses and care assistants* | 7.00 (3.20-14.00) |  |  |  |  |  |  |
|  *Onsite nurses and care assistants, offsite physicians* | 9.10 (4.60-20.90) | 1.28 (0.93-1.77) | .131 |  |  |  |  |
|  *Onsite care assistants, offsite nurses and physicians* | 8.00 (4.80-24.65) | 1.26 (0.60-2.65) | .543 |  |  |  |  |
| No. FTE nusing staff / 10. occupied beds, *≤5.25* | 10.00 (5.50-26.53) |  |  |  |  |  |  |
|   *>5.25*  | 7.00 (3.90-14.70) | 0.86 (0.67-1.11) | .245 |  |  |  |  |
| Specific written guidelines regarding palliative care, *no + don’t know* | 7.00 (3.93-14.50) |  |  |  |  |  |  |
|  *yes* | 9.90 (5.00-22.10) | 1.14 (0.88-1.47) | .332 |  |  |  |  |
| Case manager for residents with palliative care needs,  *no* | 8.80 (5.18-20.48) |  |  |  |  |  |  |
|  *yes* | 8.15 (4.10-18.80) | 0.93 (0.70-1.24) | .626 |  |  |  |  |
| Multidisciplinary meetings, *no* | 7.00 (3.93-15.35) |  |  |  |  |  |  |
|   *yes* | 9.80 (4.45-20.48) | 1.22 (0.92-1.61) | .160 |  |  |  |  |
| Advance care planning |  |  |  |  |  |  |  |
| Resident was capable of expressing his or her wishes at the time of admission |  |  |  |  |  |  |  |
|  *No* | 7.00 (4.20-16.55) |  |  |  |  |  |  |
|  *Partly* | 9.55 (4.00-18.40) | 1.16 (0.93-1.44) | .199 |  |  |  |  |
|  *Yes* | 9.55 (4.28-24.90) | 1.16 (0.93-1.44) | .196 |  |  |  |  |
| Resident expressed specific preferencesabout a medical treatment he/she did not want during the last phase of life, *no + don’t know* | 7.60 (4.30-17.60) |  |  |  |  |  |  |
|  *yes* | 9.40 (4.50-22.65) | 1.05 (0.87-1.26) | .625 |  |  |  |  |
| Resident gave power to a third party, *no* | 7.40 (4.00-17.08) |  |  |  |  |  |  |
|   *yes* | 10.20 (5.83-27.28) | 1.17 (0.94-1.46) | .154 |  |  |  |  |
| Spoke with the resident about medical treatments or about the preferred course of care*, no* | 7.10 (4.00-15.60) |  |  |  |  |  |  |
|  *yes* | 10.50 (5.68-29.73) | 1.24 (0.99-1.54) | .060 | 1.24 (0.99-1.54) | .060 | - | 0.154 |
| A contact person was mentioned in the resident’s records, *no* | 6.95 (3.93-13.70) |  |  |  |  |  |  |
|   *yes* | 8.90 (4.40-19.85) | 1.22 (0.89-1.66) | .215 |  |  |  |  |

IQR= Interquartile Range, CI= Confidence Interval. Ratio=Ratio of geometric means.
Linear GEE analyses. Dependent variable: LN (no. of days before death when palliative care was started +1).
Pooled median and IQR values were calculated as the mean of median and IQR in each imputed dataset. Median p-value was used as a measure of the pooled overall p-values51.
a: Association between dependent variable and independent variables separately, adjusted for country.
b: Association between dependent variable and independent variables in model built by backward selection, adjusted for country.

c: Association between dependent and independent variables in backwards model, including interaction term between country and independent variables identified in backward selection.