**Supplementary figure 1. Confirmatory factor analysis of revised CECCS questionnaire (397 of n2 = 450).** OVK = overarching values and knowledge, Communication = communication skills, SymManagement = symptom management, PSCC = psychosocial and community care, EoLC\_decision = EoLC decision making, Bereavement = bereavement care.

**Supplementary Table 1. Inter-item correlation analysis for the 35-item questionnaire in the randomized sample (*Pearson* r).**

|  |
| --- |
| **Overarching value and knowledge** |
|  | 2 | 3 | 4 | 5 |  |  |  |  |
| 1 | .645\*\* | .580\*\* | .516\*\* | .653\*\* |  |  |  |  |
| 2 | 1 | .662\*\* | .662\*\* | .551\*\* |  |  |  |  |
| 3 | .662\*\* | 1 | .736\*\* | .478\*\* |  |  |  |  |
| 4 | .662\*\* | .736\*\* | 1 | .456\*\* |  |  |  |  |
| 5 | .551\*\* | .478\*\* | .456\*\* | 1 |  |  |  |  |
| **Communication skills** |
|  | 7 | 8 | 9 | 10 | 11 | 12 | 13 |  |
| 6 | **.886\*\*** | .721\*\* | .794\*\* | .765\*\* | .773\*\* | .739\*\* | .672\*\* |  |
| 7 | 1 | .761\*\* | .825\*\* | .787\*\* | .790\*\* | .751\*\* | .712\*\* |  |
| 8 | .761\*\* | 1 | **.864\*\*** | .724\*\* | .746\*\* | .727\*\* | .709\*\* |  |
| 9 | .825\*\* | .864\*\* | 1 | .818\*\* | .840\*\* | .817\*\* | .774\*\* |  |
| 10 | .787\*\* | .724\*\* | .818\*\* | 1 | **.908\*\*** | .842\*\* | .747\*\* |  |
| 11 | .790\*\* | .746\*\* | .840\*\* | .908\*\* | 1 | **.874\*\*** | .763\*\* |  |
| 12 | .751\*\* | .727\*\* | .817\*\* | .842\*\* | .874\*\* | 1 | .812\*\* |  |
| 13 | .712\*\* | .709\*\* | .774\*\* | .747\*\* | .763\*\* | .812\*\* | 1 |  |
| **Symptoms management** |
|  | 15 | 16 | 17 | 18 | 19 |  |  |  |
| 14 | .769\*\* | .873\*\* | .664\*\* | .584\*\* | .705\*\* |  |  |  |
| 15 | 1 | .805\*\* | .738\*\* | .642\*\* | .619\*\* |  |  |  |
| 16 | .805\*\* | 1 | .708\*\* | .623\*\* | .732\*\* |  |  |  |
| 17 | .738\*\* | .708\*\* | 1 | .822\*\* | .614\*\* |  |  |  |
| 18 | .642\*\* | .623\*\* | .822\*\* | 1 | .564\*\* |  |  |  |
| 19 | .619\*\* | .732\*\* | .614\*\* | .564\*\* | 1 |  |  |  |
| **Psycho-social and spiritual care** |
|  | 21 | 22 | 23 | 24 | 25 |  |  |  |
| 20 | .824\*\* | .690\*\* | .706\*\* | .790\*\* | .753\*\* |  |  |  |
| 21 | 1 | .704\*\* | .719\*\* | .788\*\* | .760\*\* |  |  |  |
| 22 | .704\*\* | 1 | **.943\*\*** | .714\*\* | .681\*\* |  |  |  |
| 23 | .719\*\* | .943\*\* | 1 | .716\*\* | .701\*\* |  |  |  |
| 24 | .788\*\* | .714\*\* | .716\*\* | 1 | .817\*\* |  |  |  |
| 25 | .760\*\* | .681\*\* | .701\*\* | .817\*\* | 1 |  |  |  |
| **EoLC decision making** |
|  | 27 | 28 | 29 | 30 | 31 | 32 |  |  |
| 26 | **.903\*\*** | .820\*\* | .765\*\* | .740\*\* | .762\*\* | .742\*\* |  |  |
| 27 | 1 | **.863\*\*** | .817\*\* | .793\*\* | .774\*\* | .789\*\* |  |  |
| 28 | .863\*\* | 1 | .846\*\* | .803\*\* | .786\*\* | .738\*\* |  |  |
| 29 | .817\*\* | .846\*\* | 1 | **.874\*\*** | .767\*\* | .719\*\* |  |  |
| 30 | .793\*\* | .803\*\* | .874\*\* | 1 | .782\*\* | .703\*\* |  |  |
| 31 | .774\*\* | .786\*\* | .767\*\* | .782\*\* | 1 | .762\*\* |  |  |
| 32 | .789\*\* | .738\*\* | .719\*\* | .703\*\* | .762\*\* | 1 |  |  |
| **Bereavement care** |
|  | 34 | 35 |  |  |  |  |  |  |
| 33 | **.882\*\*** | .812\*\* |  |  |  |  |  |  |
| 34 | 1 | .799\*\* |  |  |  |  |  |  |
| 35 | .799\*\* | 1 |  |  |  |  |  |  |

**Note:** items with high inter-items correlations (*r* > .85) need be modified.

**Supplementary Table 2. 26-item Comprehensive competences end-of-life scale (CECCS)**

Instruction: How competent do you feel, as stated below, in end-of-life care? Please rate on a scale from 1 to 10, with 1 meaning “Not competent at all” to 10 meaning “Very competent”. Please choose N/A if you think that the question is irrelevant to your situation.

|  |  |  |
| --- | --- | --- |
|  |  **Not competent at all Very competent** |  |
| **Overarching values and knowledge**  |
| * 1. Understanding how society and culture influence people’s attitudes towards dying and death
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Handling ethical issues that arise in caring for patients near the end of life
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Maintaining appropriate professional boundaries when helping patients at their end-of-life and their families
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| **Communication Skills**  |
| * 1. Listening to and talking with patients with advanced illnesses about issues surrounding their death, e.g. breaking bad news about his/her illness, discussing advance care planning
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Discussing with patients with advanced illnesses and family members about their psychosocial needs and concerns
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Recognizing patients’ and family members’ verbal/non-verbal communication cues
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Facilitating communication among patients, family members and end-of-life care team
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Able to collaborate with multi-disciplinary end-of-life care team efficiently and appreciate their respective roles in providing end-of-life care
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| **Symptom management** |
| * 1. Helping patients with their pain
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Using non-pharmaceutical, complementary and alternative therapies to help patients cope with distressing symptoms at the end-of-life
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Helping patients with other distressing symptoms that are commonly experienced at the end-of-life (e.g. breathing problems, fatigue, nausea and vomiting)
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Recognizing signs when a patient is dying
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| **Psychosocial and Community Care** |
| * 1. Using holistic assessment with patients with advanced illnesses and their families
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Applying evidence-based psychosocial intervention based on the needs assessments
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Applying an individualized end-of-life care plan
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Informing patients and families of other available support services
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Understanding available community resources and services in supporting patients and family at end-of-life
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| **End-of-Life Decision Making** |
| * 1. Understanding how “Advance Care Planning” can enhance end-of-life care
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Finding out patients’ wishes over care decisions should they lose capacity
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Preparing patients and families for death by discussing unfinished business, after-death care, funeral and ritual, and body disposition wishes with patients and families
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Understanding legal issues relating to end-of-life care (e.g. advance directives, will, enduring power of attorney, guardianship, professional codes of practice)
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Discussing and preparing Advance Directives (AD) and Do-Not-Attempt Cardiopulmonary Resuscitation (DNACRP) with patients and their families
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| **Bereavement Care**  |
| * 1. Understanding normal and complicated grief reactions
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Offering bereavement counselling to bereaved families and individuals
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| **Self-care**  |
| * 1. Fully accepting that I cannot completely control life, for example, the life and death of patient/service user
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |
| * 1. Effectively coping with my emotions induced by work
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N/A |