Original Article

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CAMBRIDGE
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Reliability and validity of the Self-Efficacy in Palliative Care Scale among nurses

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Abstract

Objectives. To provide appropriate palliative care, nurses should have appropriate level of self-efficacy in palliative care, but the levels among nurses were low. To improve the levels effectively, self-efficacy in palliative care should be assessed using reliable and valid instruments. The purpose of this study was to examine the reliability and validity of the Self-Efficacy in Palliative Care Scale in Korean nurses.

Methods. In this cross-sectional, observational study, 272 nurses (mean age: 30 years) were enrolled from 6 university-affiliated medical centers or community hospitals in South Korea. Data on self-efficacy and demographic characteristics were collected. Validity was assessed by exploratory and confirmatory factor analyses (SPSS and Mplus). Reliability and homogeneity were assessed by Cronbach's alpha and item analyses (SPSS), respectively.

Results. The exploratory and confirmatory factor analyses supported the 4-factor structure (communication, assessment and symptom management, psychosocial and spiritual management of patient and family, and multiprofessional teamworking) with factor loadings >.60 and with good model fit: root mean square error of approximation =.07, Tucker–Lewis index = .94, comparative fit index =.95, and standardized root mean square residual =.04. Cronbach's alphas for the total scale and each of the subscales ranged from .883 to .965. The corrected item–total correlation coefficients of all items ranged from .61 to .90.

Significance of results. The findings of this study supported the reliability and validity of this instrument among Korean nurses. This instrument can be used to assess nurses' self-efficacy in palliative care and to test intervention effects on it.

Introduction

Research findings demonstrate the benefits of palliative care on use of symptom burden, quality of life, patient satisfaction, caregiver burden, and readmission rates and costs in patients with chronic diseases (Adejumo et al. 2020; Bakitas et al. 2017; Diop et al. 2017; Quinn et al. 2020). The use of palliative care is, however, still suboptimal in many populations; 38% to 95% of adults did not receive palliative care before their deaths (Adejumo et al. 2020; Assareh et al. 2020; Isenberg et al. 2021). Thus, early initiation of palliative care as part of standard care for patients with chronic conditions is warranted.

To initiate palliative care in the early stage of any chronic conditions, health-care providers need appropriate levels of self-efficacy in palliative care (Carey et al. 2019; Salins et al. 2020). Self-efficacy in palliative care can be defined as an individual's beliefs in own ability or capacity to perform palliative care or skill (Mason and Ellershaw 2004). The levels of self-efficacy have been low in nursing students (6.53 out of 10 or 1.96 out of 4) and nurses (6.91 out of 10 or 34 out of 48) across Eastern and Western countries (Herrero-Hahn et al. 2019; Kim et al. 2020; Zhou et al. 2021). Low levels of self-efficacy may be one reason for suboptimal provision of palliative care (Carey et al. 2019; Salins et al. 2020). Nurses can initially assess the needs for palliative care, initiate palliative care, and refer patients for palliative care (Janssen et al. 2019; Lin et al. 2021). Therefore, the levels of self-efficacy in palliative care among nurses should be assessed and improved. To assess the levels appropriately, use of reliable and valid instruments is critical. However, the psychometric properties among nurses have been tested in a few Western countries, including Spain and Australia (Herrero-Hahn et al. 2019; Phillips et al. 2011). Furthermore, palliative care is a holistic care, including physical,

psychosocial, and spiritual aspects, which is influenced by cultures (Cheng 2018; Givler et al. 2021; Sobanski et al. 2020). Therefore, the psychometric properties of self-efficacy instruments also need to be tested and validated in different cultures.

Mason and Ellershaw (2004) developed the Self-Efficacy in Palliative Care Scale based on Bandura's Social Cognitive theory to assess 3 aspects of self-efficacy in palliative care, including communication, patient management, and multidisciplinary teamworking. The reliability and validity with the 3 subscales were supported among undergraduates in the United Kingdom (Mason and Ellershaw 2004). This instrument or part of it has been used in health-care providers and students in Western countries (Clark et al. 2015; Herrero-Hahn et al. 2019; Mason and Ellershaw 2004, 2008, 2010). The psychometric properties of the Spain version with a 10-point Likert scale were supported with 4 subscales, including communication, multiprofessional teamworking, patient management–physical, and patient management–psychosocial–spiritual in nursing students and nurses (Herrero-Hahn et al. 2019). Considering the acceptable reliability and validity among nursing students and nurses in Western countries, a theory-based instrument, and reflection of multiple aspects of self-efficacy, the psychometric properties of this instrument can be tested in Eastern countries.

In Eastern countries, implementation of palliative care into standard care has been encouraged, but use of palliative care is suboptimal (Kim and Hong 2016; Wang et al. 2018; Yoshimoto et al. 2017). Implementation of palliative care in Asian countries may differ from those in Western countries because of cultural differences in the attitudes and beliefs toward death among health-care providers, patients, and caregivers. In Eastern countries, people commonly say that bad life in this world is better than good death, and open discussion of negative issues can bring negative consequences (Cheng et al. 2015). Therefore, health-care providers or caregivers hesitate to initiate open discussion of near or possible death of the patient and the care plan (Cheng et al. 2015). Thus, the psychometric properties of the instrument need to be tested in Asian cultures. The purpose of this study, therefore, was to examine the psychometric properties of the Self-Efficacy in Palliative Care Scale in Korean nurses.

Methods

Study design and setting

This was a cross-sectional, observational study to examine the psychometric properties of the Self-Efficacy in Palliative Care Scale in a convenience sample of Korean nurses. The research participants were recruited from 6 university-affiliated medical centers or community hospitals in South Korea from March to May 2021.

Sample

The inclusion criteria were nurses and ≥6 months of clinical experiences. The exclusion criterion was nurses with chronic illnesses or cancer survivors due to the possible confounding effects. The sample size was determined based on recommendation by Nunnally and Bernstein (1994) and Pett et al. (2003) (10–15 research subjects per item). The instrument has 23 items, requiring 230–345 research subjects. The sample size in this study ($N = 272$) was within the sample size range (15 out of 287 cases were excluded because of missing data). During exploratory factor analysis, the adequacy of

the sample size calculated was examined by Kaiser–Meyer–Olkin test (adequacy of sample size: ≥.80) (Nievas Soriano et al. 2020). Kaiser–Meyer–Olkin in the exploratory factor analysis was .947. Thus, the sample size of this study was adequate.

The Self-Efficacy in Palliative Care Scale and the translation processes

The Self-Efficacy in Palliative Care Scale has been developed by Mason and Ellershaw (2004) in the United Kingdom. After the approval from the developer, the translations of the instrument were done according to the recommended process of the World Health Organization (Casale et al. 2020; World Health Organization 2020), including forward translation, expert panel back translation, back translation, pretesting and cognitive interviewing, and final version.

For the forward translation, one author (Translator 1) who is a content and methodology expert and has involved in tests of psychometric properties for several times translated the English version to the Korean version. In the translation, Translator 1 tried to use conceptually equivalent words or phrases and simple and concise structure format, considering the research subjects, gender, and age. For the expert panel back translation, an expert panel was established to include the corresponding author, Translator 1, and 3 co-authors. The expert panel reviewed the translated version and/or the original English version independently to identify whether appropriate words and phrases were used in the translated version and gave recommendations. Then, the expert panel discussed all the recommendations to reach a consensus about those recommendations and revisions, resulting in Korean Version 1. During back-translation stage, Translator 2 and Translator 3 were fluent in both English and Korean languages and translated the Korean Version 1 to English, considering the conceptual and cultural equivalence in the words and phrases. Both Translator 2 and Translator 3 were not the authors of this study. The expert panel reviewed the back-translated versions and suggested recommendations regarding the Korean Version 1. The expert panel reviewed the original English version, the Korean Version 1, and the back-translated versions with the recommendations and reached a consensus. Based on the consensus, the expert panel revised some wordings in the Korean Version 1 to develop the Korean Version 2.

During pretesting and cognitive interviewing stage, 15 nurses (mean age: 34 years old, 93.3% female, and 20–384 months of clinical experiences [average: 139 months]) from 2 university-affiliated medical centers participated in the pretest. The participants filled out the instrument and also responded to the appropriateness of the content, understanding, and wording of each item using a 5-point Likert scale, with higher scores indicating higher levels of appropriateness. To help research participants' appropriate responses, the 1–10 Likert scale response option, which was used in the Spain version (Herrero-Hahn et al. 2019), was used. In addition, one open-ended question was included into each section to collect any comments or suggestions regarding the expression of each item. The mean scores of the appropriateness of the content, understanding, and wording were 3.95 out of 5 (range: 3.73–4.40), 4.24 (range: 3.73–4.47), and 4.28 (range: 3.67–4.6), respectively. During the final version stage, although the overall mean ratings of the pretest and cognitive interviewing indicated that all the items of the Korean Version 2 were appropriate, the expert panel reviewed those items of the Korean Version 2 that obtained rating 2 or below from any individual participants of the pretest and

cognitive interviewing. The expert panel revised a few words of the Korean Version 2 and developed the Self-Efficacy in Palliative Care Scale–Korean Version.

Data collection

Data on self-efficacy and sample characteristics were collected by the research coordinators of the 6 university-affiliated medical centers and community hospitals according to the standard protocol. The research coordinator at each hospital approached the eligible nurses using her networks to recruit nurses. A cross-sectional, web-based survey was done using a standardized e-questionnaire generated by the Google form. The online survey link included information about an informed consent statement, notifying each possible participant that responding to the survey questions would be assumed his/her consent to participation in this study.

Self-efficacy was assessed by the Self-Efficacy in Palliative Care Scale–Korean Version. This instrument consists of 23 items with 1- to 10-point Likert scale (from 1 [*very anxious*] to 10 [*very confident*]) like the Spain version (Herrero-Hahn et al. 2019). The possible mean score of each item, each subscale, and the total scale ranges from 1 to 10, and higher scores indicate higher levels of self-efficacy.

Data on sample characteristics, including age, clinical work experience, gender, education, marital status, and religion, were collected using a standard questionnaire.

Ethical consideration

This study was approved by the Institutional Review Board of the University (Ethical Code No.: 1044396–202011-HR-181-01). All research participants provided online written informed consent before data collection commenced. The research team conducted this study based on the principles in the Declaration of Helsinki (World Medical Association 2013).

Data analysis

All data analyses were conducted using IBM SPSS version 27.0 and Mplus version 8.0 (IBM Corporation 2020; Muthén and Muthén 1998–2017). To describe sample characteristics, descriptive statistics were used. To test internal consistency reliability, Cronbach's alpha coefficient was examined (acceptable level: $\geq$.70) (Streiner and Norman 2001). To test item homogeneity, item–total correlations in each subscale and in the total scale were examined (acceptable level: >.30) (Ferketich 1991). To test construct validity, exploratory factor analysis and confirmatory factor analysis were used. In the exploratory factor analysis, unweighted least squares with promax with Kaiser normalization method was used to minimize the differences in the sum of the squared between the observed correlation metrics and the reproduced correlation matrices and to allow factors to be correlated (IBM Corporation 1989, 2016a, 1989, 2016b; Pett et al. 2003). A scree plot, eigenvalues, total variance, a loading score of $\geq$.45, and theoretical appropriateness were considered to determine factor structure (Pett et al. 2003). For the confirmatory factor analysis, root mean square error of approximation (close to .08), Tucker–Lewis index (close to .95), comparative fit index (close to .95), and standardized root mean square residual (close to .08) were used (Hu and Bentler 1999). In all the analyses, 2-tailed tests with significance level of <.05 were used.

Table 1. Sample characteristics ($N = 272$)

Characteristic	Mean $\pm$ standard deviation
Mean age, year	30.3 $\pm$ 6.0
Work experience, month	85.1 $\pm$ 80.4
	n (%)
Gender, female	242 (89.0)
Education	
College	27 (9.9)
Bachelor	212 (77.9)
Master	32 (11.8)
Doctor	1 (0.4)
Marital status, married	70 (25.7)
Religion	
Christian	54 (19.9)
Catholic	27 (9.9)
Buddhism	20 (7.4)
None	171 (62.9)

Results

Among 346 nurses who approached, 272 (78.6%) participated in this study. The mean age was 30.3 years (Table 1), and average clinical work experiences were 85.1 months. The majority were female (89.0%) and had bachelor's degree (77.9%).

Exploratory factor analysis

Based on a scree plot, eigenvalues, total variance, a loading score of $\geq$0.45, and theoretical appropriateness (Pett et al. 2003), a 4-factor structure (Factor 1: #1–#8; Factor 2: #9–#13; Factor 3: #14–#16; and Factor 4: #17–#23: 71.3% of the variance) was selected. Factor 1 (Communication Subscale) included all items of the Communication Subscale in the original English version (Mason and Ellershaw 2004) and the Spain version (Herrero-Hahn et al. 2019), and factor loadings for all items ranged from .665 to .886. Factor 2 (Assessment and Symptom Management Subscale) included all items of the Patient Management–Physical Subscale in the Spain version (Herrero-Hahn et al. 2019), and factor loadings ranged from .634 to .866. Factor 3 (Psychosocial and Spiritual Management of Patient and Faculty Subscale) included all items of the Patient Management–Psycho–Spiritual Subscale in the Spain version (Herrero-Hahn et al. 2019), and factor loadings ranged from .812 to .887. Factor 4 (Multiprofessional Teamworking Subscale) included all items in the Multiprofessional Teamworking in the English version (Mason and Ellershaw 2004) and the Spain version (Herrero-Hahn et al. 2019), and factor loadings ranged from .764 to .926. We renamed Factor 3 and Factor 4 to reflect the content of each subscale.

Confirmatory factor analysis

The model fit test results are the following: root mean square error of approximation =.07, Tucker–Lewis index =.94, comparative fit index =.95, and standardized root mean square residual =.04, indicating acceptable model fit. The results of confirmatory factor
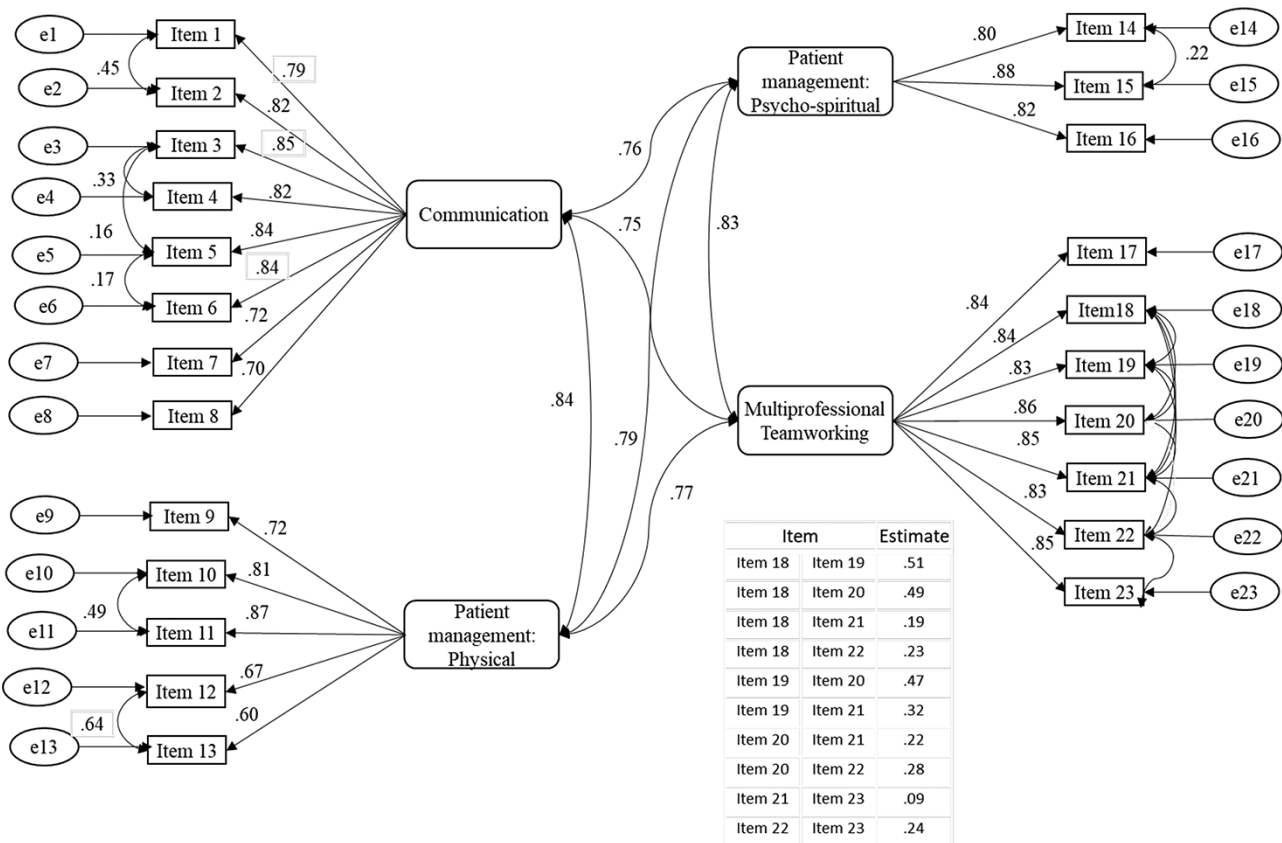
Fig. 1. Confirmatory factor analysis.

analysis are presented in Figure 1. All items in each subscale loaded adequately.

Internal consistency reliability and item homogeneity

Internal consistency reliability for the total scale and each subscale was acceptable; Cronbach's alphas ranged from .879 to .965 (Table 2). In item analyses, the mean score of each item ranged from 5.21 to 6.12 out of 10 for the Communication Subscale, from 6.06 to 6.90 out of 10 for the Assessment and Symptom Management Subscale, from 5.37 to 6.22 out of 10 for the Psychosocial and Spiritual Management of Patients and Family Subscale, and from 5.61 to 6.03 out of 10 for the Multiprofessional Teamworking Subscale. The item–total correction coefficients in each subscale and the total scale ranged from .625 to .895 and from .535 to .805, respectively.

Discussion

The findings of this study demonstrate the reliability and validity of the Self-Efficacy in Palliative Care–Korean Version using comprehensive psychometric property tests. The results of the exploratory and confirmatory factor analyses supported 4-factor structure and the validity of the instrument. Cronbach's alphas supported the internal consistency reliability of the total scale and all the subscales. The results of item analyses supported the item homogeneity of the total scale and also each subscale. To our knowledge, this is the first study that examined the psychometric properties of the Self-Efficacy in Palliative Care Scale comprehensively in Asian countries. The factor structure in this study was the same

as that in the Spain version, while different from that in the original English version, although the reliability and validity in all the 3 versions were supported. The findings of this study add valuable information regarding the possible use of the instrument in Asian countries, although further validation is needed in other Asian countries.

The levels of self-efficacy in palliative care among nurses and/or nursing students were low to moderate in this study and a prior study in Spain (Herrero-Hahn et al. 2019). In this study, the levels of self-efficacy in all the subscales were similar or somewhat lower than those in the Spain study (Herrero-Hahn et al. 2019). In particular, the levels of self-efficacy in multiprofessional teamworking in Spain nurses and nursing students were higher than those in Korean nurses. The levels of self-efficacy in Chinese nursing students were also low (Zhou et al. 2021). The findings in this study and in the prior studies demonstrate the strong needs for improvements in self-efficacy in palliative care among nursing students and nurses in both Western and Asian countries, especially in Asian countries. The strong needs are clear when considering the increased needs for palliative care in aging and non-aging populations with malignant and/or non-malignant chronic diseases (Finucane et al. 2021; Ghosh et al. 2015; Robinson and Holloway 2017; Sobanski et al. 2020; Tziraki et al. 2020; van der Steen et al. 2014) and the positive roles of self-efficacy in health outcomes, caregiver burden, and use of health-care services (Adejumo et al. 2020; Bakitas et al. 2017; Diop et al. 2017; Evans et al. 2019; Ng and Wong 2018; Quinn et al. 2020). The first step to improve self-efficacy in palliative care among nurses is to assess the levels using a reliable and valid instrument.

Table 2. Internal consistency reliability and item analysis

Item	Mean	Standard deviation	Item–total correlation in subscale	Item–total correlation in total Scale	Cronbach's alpha	McDonald's omega
Communication Subscale	5.67	1.390	NA	NA	.936	.944
1. Likely effects of cancer/disease with the patient	5.76	1.617	.788	.706		
2. Likely effects of cancer with the patient's family	5.88	1.590	.807	.755		
3. Death- and dying-related issues	5.64	1.747	.844	.763		
4. Patient's death with the patient	5.50	1.756	.807	.733		
5. Patient's death (to occur) with the family	5.75	1.645	.823	.751		
6. Patient's death with the family upon bereavement	5.51	1.672	.802	.755		
7. Patient's question regarding the length of own survival	5.21	1.727	.688	.662		
8. Patient's question regarding the levels of suffering or pain	6.12	1.594	.641	.676		
Assessment and Symptom Management Subscale	6.48	1.313	N/A	N/A	.883	.858
9. Ability to assess patient needs	6.53	1.411	.625	.661		
10. Knowledge about the etiology of common symptoms	6.06	1.669	.759	.736		
11. Ability to manage common symptoms	6.06	1.679	.779	.786		
12. Ability to prescribe appropriate and adequate analgesic agents	6.88	1.608	.741	.607		
13. Knowledge about the effects and side-effects of analgesic agents	6.90	1.571	.695	.535		
Psychosocial and Spiritual Management of Patients and Family Subscale	5.81	1.529	N/A	N/A	.879	.872
14. Ability to provide psychological care for patients and the family	6.22	1.638	.751	.715		
15. Ability to provide social care for patients and the family	5.83	1.673	.827	.760		
16. Ability to provide spiritual care for patients and the family	5.37	1.797	.727	.696		
Multiprofessional Teamworking Subscale	5.84	1.478	N/A	N/A	.956	.945
17. Work within a multiprofessional palliative care team	5.85	1.696	.765	.805		
18. Appropriate reference of patients for physiotherapy	5.86	1.661	.878	.777		
19. Appropriate reference of patients for occupational therapy	5.85	1.629	.871	.739		
20. Appropriate reference of patients for complementary therapies	5.92	1.590	.895	.775		
21. Appropriate reference of patients to a lymphedema service	5.61	1.649	.858	.764		
22. Appropriate reference of patients for psychiatric evaluation	6.03	1.697	.846	.738		
23. Appropriate reference of patients to a spiritual advisor	5.77	1.714	.818	.750		
Total Scale	5.81	1.529	N/A	N/A	.965	.977

The internal consistency reliability of the Korean version of the instrument has been well supported for the total scale and all the subscales in this study. In the original English version with 3 subscales and the Spain version with 4 subscales, the internal consistency reliability of the total scale and each of the subscales was also well supported with Cronbach's alpha >.70 (Herrero-Hahn et al. 2019; Mason and Ellershaw 2004). In addition, in this study, item analyses supported item homogeneity of all items in the total scale and in each subscale. In the 2 prior studies (Herrero-Hahn et al. 2019; Mason and Ellershaw 2004), item analyses were not conducted. Thus, the findings of this study add more information about the item homogeneity of this instrument. Overall, all the items of each subscale contributed to each subscale and to the total scale homogeneously.

The construct validity of the instrument has been well supported by the results of the exploratory and confirmatory factor analyses in this study. The results of both exploratory and confirmatory factor analyses confirmed 4-factor structure of this instrument, explaining 71.3% of the variance. In the original English version, 3 factors based on exploratory factor analysis explained 68.2 and 74.7% of variance in nursing students (Mason and Ellershaw 2004). In the Spain version (Herrero-Hahn et al. 2019), the authors tested both 3-factor and 4-factor structure based on populations, including nursing student-alone group, nurses-alone group, and both nursing students and nurses group. In the nurses-only group, the 3-factor structure did not work well. Thus, the authors presented factor loadings based on the 4-factor structure, which worked well for all the groups

(Herrero-Hahn et al. 2019). In the current study, we determined the 4-factor structure based on the results of the exploratory factor analysis and theoretical appropriateness and confirmed the structure based on the results of confirmatory factor analysis in nurses. The findings in this study and the prior studies demonstrate the construct validity of this instrument in different cultures and imply that the factor structure may be different depending on the populations. Therefore, further studies are needed to test the validity of this instrument in nursing students and nurses whether the same structure works for both nursing students and nurses.

Limitations

Limitations of this study include a sample from one Eastern country with one race and imbalanced gender ratio, which may limit the generalizability of this instrument. Even though the sample came from one country with one race, the sample came from 6 different medical institutions. Even though the majority of the sample was female, this is a common characteristic of this population. Additionally, the forward translation was done by one of the authors of this study, which might bias the translation. However, the back translation based on the forward translation was done by 2 independent translators who were not the authors of this study to avoid bias. The back translation did not significantly differ from the original version of the instrument.

Conclusions

The findings of this study support the reliability and validity of the Self-Efficacy in Palliative Care Scale–Korean Version. The reliability and item homogeneity of the total scale and all the subscales were well supported. The validity of the instrument was also well supported by the results of the exploratory and confirmatory factor analyses and the known relationship tests. Clinicians and researchers can use this instrument to assess and improve self-efficacy in palliative care among nurses.

References

Adejumo AC, Kim D, Iqbal U, *et al.* (2020) Suboptimal use of inpatient palliative care consultation may lead to higher readmissions and costs in end-stage liver disease. *Journal of Palliative Medicine* **23**(1), 97–106. doi:10.1089/jpm.2019.0100

Assareh H, Stubbs JM, Trinh LTT, *et al.* (2020) Variations in hospital inpatient palliative care service use: A retrospective cohort study. *BMJ Supportive & Palliative Care* **10**(3), e27. doi:10.1136/bmjspcare-2018-001578

Bakitas M, Dionne-Odom JN, Pamboukian SV, *et al.* (2017) Engaging patients and families to create a feasible clinical trial integrating palliative and heart failure care: Results of the ENABLE CHF-PC pilot clinical trial. *BMC Palliative Care* **16**(1), 45. doi:10.1186/s12904-017-0226-8

Carey ML, Zucca AC, Freund MA, *et al.* (2019) Systematic review of barriers and enablers to the delivery of palliative care by primary care practitioners. *Palliative Medicine* **33**(9), 1131–1145. doi:10.1177/0269216319865414

Casale G, Magnani C, Fanelli R, *et al.* (2020) Supportive and palliative care indicators tool (SPICT): Content validity, feasibility and pre-test of the Italian version. *BMC Palliative Care* **19**(1), 79. doi:10.1186/s12904-020-00584-3

Cheng HWB (2018) Advance care planning in Chinese seniors: Cultural perspectives. *Journal of Palliative Care* **33**(4), 242–246. doi:10.1177/0825859718763644

Cheng SY, Suh SY, Morita T, *et al.* (2015) A cross-cultural study on behaviors when death is approaching in East Asian countries: What are the physician-perceived common beliefs and practices? *Medicine (Baltimore)* **94**(39), e1573. doi:10.1097/MD.0000000000001573

Clark K, Curry T and Byfieldt N (2015) The effect of a care bundle on nursing staff when caring for the dying. *International Journal of Palliative Nursing* **21**(8), 392–398. doi:10.12968/ijpn.2015.21.8.392

Diop MS, Rudolph JL, Zimmerman KM, *et al.* (2017) Palliative care interventions for patients with heart failure: A systematic review and meta-analysis. *Journal of Palliative Medicine* **20**(1), 84–92. doi:10.1089/jpm.2016.0330

Evans CJ, Ison L, Ellis-Smith C, *et al.* (2019) Service delivery models to maximize quality of life for older people at the end of life: A rapid review. *The Milbank Quarterly* **97**(1), 113–175. doi:10.1111/1468-0009.12373

Ferketich S (1991) Focus on psychometrics. Aspects of item analysis. *Research in Nursing & Health* **14**(2), 165–168. doi:10.1002/nur.4770140211

Finucane AM, Bone AE, Etkind S, *et al.* (2021) How many people will need palliative care in Scotland by 2040? A mixed-method study of projected palliative care need and recommendations for service delivery. *BMJ Open* **11**(2), e041317. doi:10.1136/bmjopen-2020-041317

Ghosh A, Dzeng E and Cheng MJ (2015) Interaction of palliative care and primary care. *Clinics in Geriatric Medicine* **31**(2), 207–218. doi:10.1016/j.cger.2015.01.001

Givler A, Bhatt H and Maani-Fogelman PA (2021) The importance of cultural competence in pain and palliative care. *StatPearls*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/pubmed/29630206 (accessed 20 August 2021).

Herrero-Hahn R, Montoya-Juarez R, Hueso-Montoro C, *et al.* (2019) Cultural adaptation, validation, and analysis of the self-efficacy in palliative care scale for use with Spanish nurses. *International Journal of Environmental Research and Public Health* **16**(23), 4840. doi:10.3390/ijerph16234840

Hu L and Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal* **6**(1), 1–55. doi:10.1080/10705519909540118

IBM Corp (2020) IBM SPSS statistics for windows, version 27.0. IBM Corp.

IBM Corporation (1989, 2016a) Factor analysis extraction. https://www.ibm.com/docs/en/spss-statistics/24.0.0?topic=analysis-factor-extraction (accessed 04 August 2021).

IBM Corporation (1989, 2016b) Factor analysis rotation. https://www.ibm.com/docs/en/spss-statistics/24.0.0?topic=analysis-factor-rotation (accessed 04 August 2021).

Isenberg SR, Meaney C, May P, *et al.* (2021) The association between varying levels of palliative care involvement on costs during terminal hospitalizations in Canada from 2012 to 2015. *BMC Health Services Research* **21**(1), 331. doi:10.1186/s12913-021-06335-1

Janssen DJ, Boyne J, Currow DC, *et al.* (2019) Timely recognition of palliative care needs of patients with advanced chronic heart failure: A pilot study of a Dutch translation of the needs assessment tool: Progressive disease – heart failure (NAT:PD-HF). *European Journal of Cardiovascular Nursing* **18**(5), 375–388. doi:10.1177/1474515119831510

Kim H and Hong Y (2016) Hospice palliative care in South Korea: Past, present, and future. *The Korean Journal of Hospice and Palliative Care* **19**(2), 99–108. doi:10.14475/kjhpc.2016.19.2.99

Kim JS, Kim J and Gelegjamts D (2020) Knowledge, attitude and self-efficacy towards palliative care among nurses in Mongolia: A cross-sectional descriptive study. *PLoS One* **15**(7), e0236390. doi:10.1371/journal.pone.0236390

Lin YH, Lin MH, Chen CK, *et al.* (2021) The differences in nurses' willingness to discuss palliative care with patients and their family members. *Journal of the Chinese Medical Association* **84**(3), 280–284. doi:10.1097/JCMA.0000000000000484

Mason S and Ellershaw J (2004) Assessing undergraduate palliative care education: Validity and reliability of two scales examining perceived efficacy

and outcome expectancies in palliative care. *Medical Education* **38**(10), 1103–1110. doi:10.1111/j.1365-2929.2004.01960.x

Mason SR and Ellershaw JE (2008) Preparing for palliative medicine; Evaluation of an education programme for fourth year medical undergraduates. *Palliative Medicine* **22**(6), 687–692. doi:10.1177/0269216308090070

Mason SR and Ellershaw JE (2010) Undergraduate training in palliative medicine: Is more necessarily better? *Palliative Medicine* **24**(3), 306–309. doi:10.1177/0269216309351867

Muthén LK and Muthén BO (1998–2017) *Mplus User's Guide*, 8th edn. Los Angeles, CA: Muthén & Muthén.

Ng AYM and Wong FKY (2018) Effects of a home-based palliative heart failure program on quality of life, symptom burden, satisfaction and caregiver burden: A randomized controlled trial. *Journal of Pain and Symptom Management* **55**(1), 1–11. doi:10.1016/j.jpainsymman.2017.07.047

Nievas Soriano BJ, Garcia Duarte S, Fernandez Alonso AM, *et al.* (2020) Validation of a questionnaire developed to evaluate a pediatric eHealth website for parents. *International Journal of Environmental Research and Public Health* **17**(8), 2671. doi:10.3390/ijerph17082671

Nunnally JC and Bernstein IH (1994) *Psychometric Theory*, 3rd edn. New York, NY: McGraw-Hill.

Pett MA, Lackey NR and Sullivan JJ (2003) *Making Sense of Factor Analysis: The Use of Factor Analysis for Instrument Development in Health Care Research*. Thousand Oaks, CA: Sage Publications.

Phillips J, Salamonson Y and Davidson PM (2011) An instrument to assess nurses' and care assistants' self-efficacy to provide a palliative approach to older people in residential aged care: A validation study. *International Journal of Nursing Studies* **48**(9), 1096–1100. doi:10.1016/j.ijnurstu.2011.02.015

Quinn KL, Shurrab M, Gitau K, *et al.* (2020) Association of receipt of palliative care interventions with health care use, quality of life, and symptom burden among adults with chronic noncancer illness: A systematic review and meta-analysis. *JAMA* **324**(14), 1439–1450. doi:10.1001/jama.2020.14205

Robinson MT and Holloway RG (2017) Palliative care in neurology. *Mayo Clinic Proceeding* **92**(10), 1592–1601. doi:10.1016/j.mayocp.2017.08.003

Salins N, Ghoshal A, Hughes S, *et al.* (2020) How views of oncologists and haematologists impacts palliative care referral: A systematic review. *BMC Palliative Care* **19**(1), 175. doi:10.1186/s12904-020-00671-5

Sobanski PZ, Alt-Epping B, Currow DC, *et al.* (2020) Palliative care for people living with heart failure: European Association for Palliative Care Task Force expert position statement. *Cardiovascular Research* **116**(1), 12–27. doi:10.1093/cvr/cvz200

Streiner DL and Norman GR (2001) *Health Measurement Scales: A Practical Guide to Their Development and Use*, 2nd edn. New York, NY: Oxford University Press.

Tziraki C, Grimes C, Ventura F, *et al.* (2020) Rethinking palliative care in a public health context: Addressing the needs of persons with non-communicable chronic diseases. *Primary Health Care and Research Development* **21**, e32. doi:10.1017/S1463423620000328

van der Steen JT, Radbruch L, Hertogh CM, *et al.* (2014) White paper defining optimal palliative care in older people with dementia: A Delphi study and recommendations from the European Association for Palliative Care. *Palliative Medicine* **28**(3), 197–209. doi:10.1177/0269216313493685

Wang T, Molassiotis A, Chung BPM, *et al.* (2018) Current research status of palliative care in Mainland China. *Journal of Palliative Care* **33**(4), 215–241. doi:10.1177/0825859718773949

World Health Organization (2020) Process of translation and adaptation of instruments [Internet]. World Health Organization. https://www.who.int/substance_abuse/research_tools/translation/en/ (accessed 04 August 2021).

World Medical Association (2013) World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA* **310**(20), 2191–2194. doi:10.1001/jama.2013.281053

Yoshimoto T, Tomiyasu S, Saeki T, *et al.* (2017) How do hospital palliative care teams use the WHO guidelines to manage unrelieved cancer pain? A 1-year, multicenter audit in Japan. *The American Journal of Hospice & Palliative Care* **34**(1), 92–99. doi:10.1177/1049909115608810

Zhou Y, Li Q and Zhang W (2021) Undergraduate nursing students' knowledge, attitudes and self-efficacy regarding palliative care in China: A descriptive correlational study. *Nursing Open* **8**(1), 343–353. doi:10.1002/nop2.635