



Development of the Korean Version of the Meaning in Life Scale for Cancer Patients

Namgu Kang¹, Hae-Yeon Yun², Young Ae Kim³, Hye Yoon Park⁴,
Jong-Heun Kim⁵, Sun Mi Kim⁶, and Eun-Seung Yu⁷ ✉

¹Department of Psychology, Korea University, Seoul, Republic of Korea

²Research and Business Foundation, The Cyber University of Korea, Seoul, Republic of Korea

³Division of Cancer Control & Policy, National Cancer Center, Goyang, Republic of Korea

⁴Department of Psychiatry, Seoul National University Hospital, Seoul National University College of Medicine, Seoul, Republic of Korea

⁵Department of Psychiatry and Behavioral Science, National Cancer Center, Goyang, Republic of Korea

⁶Department of Psychiatry, College of Medicine Chung-Ang University, Seoul, Republic of Korea

⁷Department of Counseling Psychology, The Cyber University of Korea, Seoul, Republic of Korea

Objective This study aims to understand the structure of meaning in life among patients with cancer through the validation of the Meaning in Life Scale among Korean patients (K-MiLS) with cancer.

Methods From August 2021 to November 2022, participants were recruited from multiple sites in South Korea. Participants completed related questionnaires, including the MiLS, on the web or mobile. Test-retest reliability was assessed between 2 and 4 weeks after the initial assessment. Exploratory and confirmatory factor analyses and Pearson's correlations were used to evaluate the reliability and validity of the MiLS. A multiple regression analysis was conducted to examine the sociodemographic and disease-related variables correlated with the MiLS. Regarding concurrent validity, a hierarchical regression analysis was performed.

Results The results (n=345) indicated that the K-MiLS has a four-factor structure: Harmony and Peace; Life Perspective, Purpose, and Goals; Confusion and Lessened Meaning; and Benefits of Spirituality. Regarding convergent and discriminant validity, K-MiLS was negatively correlated with Patient Health Questionnaire-9, Generalized Anxiety Disorder-7, and Fear of Cancer Recurrence Inventory while showing a significantly positive correlation with the Posttraumatic Growth Inventory, Self-Compassion Scale, Functional Assessment of Cancer Therapy-General, and Functional Social Support Questionnaire. Hierarchical regression analysis revealed that the demographic variable influencing MiLS was religious affiliation.

Conclusion The K-MiLS had a multidimensional four-factor structure similar to that of the original version. It is also a reliable and valid measure for assessing cancer survivors' meaning in life after a cancer diagnosis.

Psychiatry Investig 2025;22(3):258-266

Keywords Cancer; Meaning in life; Self-compassion; Anxiety; Depression.

INTRODUCTION

Patients diagnosed with cancer often report experiencing internal struggles, feeling that their sense of self, social relationships and roles, and life's purpose are threatened.¹ A life crisis can threaten the world that provides control and predictability to the individual who is under threat, impacting their safety and future.² Theorists who liken life crises to earth-

quakes³ emphasized the importance of cognitive processes in adapting to stressful events by understanding and integrating the event into one's life.⁴ When an individual's global meaning system is shattered, they often initiate a "meaning-making" process to construct a new meaning system. Subsequently, finding or creating appropriate meaning can lead to better adaptation.⁵

Failure to discover meaning in life is associated with psychological distress, and a lack of meaning in life has been linked to higher levels of depression, anxiety, and suicidal ideation. Conversely, a greater sense of meaning in life has been associated with positive outcomes, including higher life satisfaction, happiness, and various other measures of psychological well-being.⁶ In studies conducted with patients with cancer, those who reported a greater sense of meaning in life also exhibited lower levels of depression and anxiety

Received: July 28, 2024 **Revised:** November 18, 2024

Accepted: January 5, 2025

✉ **Correspondence:** Eun-Seung Yu, MD, PhD

Department of Counseling Psychology, The Cyber University of Korea, 106 Bukcheon-ro, Jongro-gu, Seoul 03051, Republic of Korea

Tel: +82-2-6361-1943, **Fax:** +82-2-6361-1850, **E-mail:** psyesyuu@gmail.com

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

while demonstrating a higher quality of life.^{5,7} Given the crucial role that meaning in life appears to play in the adaptation process of individuals experiencing highly stressful events, such as cancer diagnosis,⁵ the assessment and intervention of meaning in life for cancer patients seems significant.

Over the past 20 years, the topic of life's meaning has attracted considerable research interest, resulting in the development of several measurement tools.^{6,8-11} Measurement tools examining the meaning of life predominantly focused on various aspects such as the presence of meaning, exploration of meaning,⁶ sources of meaning,¹² and meaning crisis.¹¹ Tools have been developed to measure the meaning of illness among patients; however, assessment instruments specifically designed for particular patient groups, such as patients with cancer, are rare.¹³ The majority of tools developed to measure the meaning of life were developed in North America, raising the need for validation of these scales in regions with different cultural backgrounds.¹³

Reker proposed an integrative and multidimensional structure for the meaning of life, encompassing not only cognitive but also emotional and motivational aspects.¹⁴ The Meaning in Life Scale (MiLS) integrates validated measures of meaning in life among patients with cancer, constructing multidimensional components incorporating cognitive, affective, and spiritual dimensions.¹⁵

This study aimed to examine the structure of meaning in life among patients with cancer through the validation of MiLS. Additionally, this study explored the implications for clinical interventions applicable to patients with cancer by examining the structure of meaning in life and its correlates among patients with cancer.

METHODS

Participants

Participants were recruited from August 2021 to November 2022 from various locations in South Korea, including regional cancer centers, national cancer centers serving regional areas, university hospitals, and local communities. The inclusion criteria were as follows: 1) aged between 20 and 75 years, 2) within five years of cancer treatment, and 3) having no evidence of disease state. The exclusion criteria were: 1) diagnosis of metastatic cancer, 2) severe physical or mental symptoms, and 3) difficulty in responding to self-report questionnaires owing to visual or cognitive impairments. Patients were recruited in two stages: the first for exploratory factor analysis (EFA) and the second for confirmatory factor analysis (CFA). The MiLS has been validated only for cancer patients in the Americas,^{15,16} and given the lack of research in Asian cultural contexts, the present study followed a proce-

dure of conducting EFA followed by CFA.^{17,18} Without a solid theoretical foundation, it is recommended to begin with EFA; subsequently, CFA should be conducted on a separate sample to confirm whether the identified structure is consistent across various population groups.¹⁹

Based on the recommendation that the variable-to-sample ratio should be at least 1:5²⁰ and the sample size should exceed 100²¹ for EFA and that a minimum ratio of 1:10 and a typical sample size of 200 is for CFA,²² the target sample size was set at a minimum of 105 participants for EFA and 210 participants for CFA.

This study used data from a Ministry of Health and Welfare project (grant number HA21C0100).

This study was approved by the Ethics Committee at Seoul National University (H-2109-139-1258), National Cancer Center (NCC2021-0280), and The Cyber University of Korea (CUKRIB-202108-HR-002-01), South Korea. All participants were informed of the purpose of the study, the procedures and content of the assessments, and the confidentiality prior to signing the consent form. This study was conducted in accordance with the revised Helsinki Declaration of 2013 and ICH-GCP guidelines. All participants consented to the publication of research findings in academic journals or conferences under the condition of non-disclosure of personal information.

Measures

MiLS was used to measure the meaning of life in cancer patients. MiLS¹⁵ is a 21-item scale comprising four dimensions. The original developer permitted us to develop the Korean version of the MiLS (K-MiLS). We adapted the scale in compliance with the guidelines of the International Society for Pharmacoeconomics and Outcomes Research.²³ Two bilingual individuals participated in the translation and back-translation processes, and the final items were confirmed through discussions with the authors. The K-MiLS items and scoring instructions used in this study are provided in the Supplementary Materials.

Depression was measured using the Patient Health Questionnaire-9 (PHQ-9). The PHQ-9²⁴ comprises a total of nine items reflecting the diagnostic criteria for major depressive episodes outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. The total score ranged from 0 to 27, with higher scores indicating a greater severity of depressive symptoms. Cronbach's α for the PHQ-9 was 0.858 in this study.

The fear of cancer recurrence was assessed using the Fear of Cancer Recurrence Inventory (FCRI),²⁵ a multidimensional self-report scale comprising 42 items divided into seven subscales. A higher total FCRI score indicated a higher level

of fear of cancer recurrence. Cronbach's α for the FCRI was 0.943 in this study.

Anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7). The GAD-7²⁶ is a self-report scale consisting of seven items designed to screen for GAD-7 and to assess the intensity of symptoms. Higher scores indicate greater severity of anxiety symptoms. Cronbach's α for the GAD-7 was 0.932 in this study.

The quality of life of patients with cancer was assessed using the Functional Assessment of Cancer Therapy-General (FACT-G, version 4). The FACT-G²⁷ comprises a total of 27 items grouped into four domains. Each item is scored on a scale of 0 to 4, with higher scores indicating a higher quality of life. In this study, we excluded two items (social/family well-being items 1 and 3) which had low correlations in the Korean version of the FACT-G²⁸ factor analysis, and utilized 25 items. Cronbach's α for the FACT-G was 0.895 in this study.

The Posttraumatic Growth Inventory (PTGI)²⁹ was used to assess post-traumatic growth. It consists of 21 items measuring posttraumatic growth. Each item is rated on a 6-point scale, with higher scores indicating a greater experience of posttraumatic positive changes. In the validation study of the Korean version of PTGI, after excluding the five items (2, 4, 9, 14, and 20) with low factor loadings, the Cronbach's α was 0.940.

Self-compassion was measured using the Self-Compassion Scale (SCS),³⁰ a self-report scale comprising 26 items organized into six subscales rated on a 5-point Likert scale. Cronbach's α for the SCS was 0.925 in this study.

Social support was measured using the Functional Social Support Questionnaire (FSSQ).³¹ The FSSQ consists of eight items organized into two subscales on a 5-point Likert scale. Cronbach's α for the FSSQ was 0.921 in this study.

Statistical analysis

To examine the construct validity, we divided the data into two groups (group 1 [$n=123$], group 2 [$n=222$]). We performed an EFA using a common factor analysis method with oblimin rotation in group 1. The number of factors was considered based on eigenvalues greater than one and loading values greater than 0.4. To clarify the factor structure further, an additional factor analysis was conducted on the entire participant group ($n=345$).

CFA was performed for group 2 using maximum likelihood to test whether our factor structure provided a good fit to the data. We assessed the model's goodness-of-fit using the Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), root-mean-square error of approximation (RMSEA), and Standardized Root Mean Square Re-

sidual (SRMR). GFI, CFI, and NFI values greater than 0.90, RMSEA values less than 0.08, and SRMR less than 0.1 are all acceptable for a good model fit.^{32,33}

To examine convergent and discriminant validity, we calculated Pearson's correlation coefficients between the MiLS among Korean patients and other scales. We conducted correlation analyses between the PHQ-9, GAD-7, FCRI, and K-MiLS. We also conducted correlation analyses between the FACT-G, SCS, posttraumatic growth, FSSQ, and K-MiLS.

Regarding concurrent validity, hierarchical multiple regression analyses were conducted to validate the K-MiLS as a "predictor" of depression, anxiety, post-traumatic growth, and quality of life. Multiple regression analysis was conducted with controlled demographic and disease-related variables significantly correlated with the PHQ-9, GAD-7, PTG, and FACT-G. Correlation analysis, independent samples t-tests, and one-way analysis of variance were conducted to identify controlled variables associated with socio-demographic factors and the PHQ-9, GAD-7, PTG, and FACT-G.

Test-retest reliability was also assessed using Cronbach's alpha values at two to four weeks intervals.

RESULTS

The demographic characteristics of patients are presented in Table 1.

The two samples did not differ in gender, marital status, religion, education, stage of cancer progression, or recurrence; age, type of cancer, and time since diagnosis differed among the patients. An independent samples t-test was conducted to examine whether the groups had differences in MiLS. The results showed no significant differences between the two groups.

EFA

To examine the factor structure of the K-MiLS, EFA was conducted on 21 items from 123 patients with cancer. The Kaiser-Meyer-Olkin measure of sampling adequacy ($KMO=0.884$) exceeded the recommended value of 0.6,³⁴ indicating that the 21 items formed a homogeneous collection of variables suitable for factor analysis. Bartlett's test of sphericity ($\chi^2=2248.973$, $p<0.001$) also suggests that the correlations among the items are significantly different.

The factor analysis results indicated, consistent with a prior study¹⁵ that the K-MiLS consists of a four-factor structure (Table 2). Four factors with eigenvalues greater than one emerged from the MiLS analyses. The eigenvalues for the first factor were 9.524 (45.351%), for the second factor 2.526 (12.027%), for the third factor 1.814 (8.640%), and fourth factor 1.023 (4.869%), respectively. The cumulative total vari-

Table 1. Sociodemographic and disease related variables

Characteristic	Group 1 (N=123)	Group 2 (N=222)	Total (N=345)	χ^2/t	p
Age (year)	46.5±9.9	50.3±10.7	49.0±10.6	-3.249	0.001
Sex				3.553	0.059
Male	25 (20.3)	28 (12.7)	53 (15.4)		
Female	98 (79.7)	193 (87.3)	291 (84.6)		
Marital status				0.024	0.876
Yes	86 (69.9)	157 (70.7)	243 (70.4)		
No	37 (30.1)	65 (29.3)	102 (29.6)		
Parental status				0.043	0.836
Yes	84 (68.3)	154 (69.4)	234 (69.0)		
No	39 (31.7)	68 (30.6)	107 (31.0)		
Religious affiliation				0.664	0.415
Yes	77 (62.6)	129 (58.1)	206 (59.7)		
No	46 (37.4)	93 (41.9)	139 (40.3)		
Education				7.563	0.109
Middle	0 (0.0)	4 (1.8)	4 (1.2)		
High	14 (11.4)	44 (19.8)	58 (16.8)		
College	28 (22.8)	37 (16.7)	65 (18.8)		
University	62 (50.4)	101 (45.5)	163 (47.2)		
Graduate school	19 (15.4)	36 (16.2)	55 (15.9)		
Cancer type				49.877	<0.001
Stomach	1 (0.8)	12 (5.4)	13 (3.8)		
Liver	15 (12.2)	0 (0.0)	15 (4.3)		
Lung	6 (4.9)	6 (2.7)	12 (3.5)		
Colorectal	2 (1.6)	6 (2.7)	8 (2.3)		
Breast	73 (59.3)	120 (54.1)	193 (55.9)		
Cervical	2 (1.6)	8 (3.6)	10 (2.9)		
Kidney	13 (10.6)	12 (5.4)	25 (7.2)		
Blood	2 (1.6)	11 (5.0)	13 (3.8)		
Thyroid	1 (0.8)	12 (5.4)	13 (3.8)		
Lymphoma	2 (1.6)	9 (4.1)	11 (3.2)		
Ovarian	1 (0.8)	8 (3.6)	9 (2.6)		
Other	5 (4.1)	18 (8.1)	23 (6.7)		
Years since diagnosis				11.602	0.041
≤1	27 (22.0)	28 (12.6)	55 (15.9)		
1–2	39 (31.7)	61 (27.5)	100 (29.0)		
2–3	21 (17.1)	60 (27.0)	81 (23.5)		
3–4	19 (15.4)	27 (12.2)	46 (13.3)		
4–5	10 (8.1)	21 (9.5)	31 (9.0)		
Above 5	7 (5.7)	25 (11.3)	32 (9.3)		
Cancer stage				8.565	0.128
0	4 (3.3)	8 (3.6)	12 (3.5)		
1	43 (35.0)	89 (40.1)	132 (38.3)		
2	50 (40.7)	62 (27.9)	112 (32.5)		
3	22 (17.9)	44 (19.8)	66 (19.1)		
4	2 (1.6)	5 (2.3)	7 (2.0)		
Don't know	2 (1.6)	14 (6.3)	16 (4.6)		
Recurrence				2.959	0.228
Yes	5 (4.1)	7 (3.2)	12 (3.5)		
No	115 (93.5)	214 (96.4)	329 (95.4)		
Don't know	3 (2.4)	1 (0.5)	4 (1.2)		

Data are presented as mean±standard deviation or number (%)

Table 2. Factor loadings and the goodness of fit indices (N=123)

Subscale items	Factor I	Factor II	Factor III	Factor IV	
I. Harmony and Peace					
17	0.999	0.389	0.615	-0.508	
20	0.758	0.465	0.605	-0.561	
16	0.743	0.335	0.449	-0.359	
15†	0.516	0.247	0.540	-0.537	
II. Benefits of Spirituality					
19	0.470	0.994	0.369	-0.229	
18	0.469	0.975	0.373	-0.216	
21	0.475	0.930	0.444	-0.279	
III. Life Perspective, Purpose, and Goals					
7	0.600	0.313	0.877	-0.528	
9	0.532	0.306	0.856	-0.468	
3	0.461	0.319	0.837	-0.395	
11	0.554	0.309	0.826	-0.465	
1	0.469	0.287	0.807	-0.437	
6	0.493	0.176	0.710	-0.348	
13	0.523	0.255	0.642	-0.470	
IV. Confusion and Lessened Meaning					
10	-0.455	-0.133	-0.457	0.833	
12	-0.471	-0.173	-0.455	0.792	
8	-0.475	-0.150	-0.482	0.775	
4	-0.414	-0.257	-0.377	0.762	
2	-0.384	-0.122	-0.530	0.747	
14	-0.269	-0.144	-0.252	0.608	
5	-0.187	0.089	-0.296	0.430	
χ²	GFI	CFI	NFI	RMSEA	SRMR
338.716*	0.884	0.952	0.907	0.065	0.057

* $p < 0.001$; [†]indicates reverse scored item. GFI, Goodness-of-Fit Index; CFI, Comparative Fit Index; NFI, Normed Fit Index; RMSEA, root-mean-square error of approximation; SRMR, Standardized Root Mean Square Residual

ance of the four factors is 70.887%.

The factor analysis conducted on the entire participant group ($n=345$) revealed that while the factor structure and the included items were consistent with the results of the EFA, the loading values for each factor differed: Factor 1 was “Benefits of Spirituality,” Factor 2 was “Confusion and Lessened Meaning,” Factor 3 was “Harmony and Peace,” and Factor 4 was “Life Perspective, Purpose, and Goals.”

CFA

In the CFA, the goodness-of-fit indices for the K-MiLS with the four-factor model were high (GFI=0.884; CFI=0.952; NFI=0.907; RMSEA=0.065; SRMR=0.057).

Reliability for the MiLS

Cronbach's α for the K-MiLS was 0.703 (ranged from 0.660

to 0.730). The “Confusion and Lessened Meaning” subscale indicated negative correlations with the other three subscales (Table 3). A 2–4-week test-retest reliability ($n=219$) was 0.925 ($p < 0.001$).

Convergent and discriminant validity for the K-MiLS

The correlation between K-MiLS and negative emotions was for depression ($r=-0.500$), generalized anxiety ($r=-0.413$), and fear of cancer recurrence ($r=-0.353$) (Table 3). The K-MiLS showed positive correlations with quality of life ($r=0.566$), social support ($r=0.450$), and self-compassion ($r=0.590$). The correlation with post-traumatic growth ($r=0.740$) was strong. Given that the K-MiLS total score with other variables exhibited correlations of 0.3 or higher, the convergent and discriminant validity were confirmed to be at an above-moderate level.³⁵ Regarding concurrent validity, hierarchical regression

analyses controlled for sociodemographic and disease-related variables associated with the K-MiLS explained 28.1% of the total variance for depression, 22.4% for anxiety, 55.1% for post-traumatic growth, and 34.3% for quality of life. All the regression models were statistically significant (Table 4).

Among demographic and disease-related variables, the variables correlated with K-MiLS were age ($r=0.161$, $p<0.01$), parental status ($t=-2.907$, $p=0.004$), marital status ($t=-3.251$, $p=0.001$), religion ($t=-7.838$, $p<0.001$) and time after cancer treatment ($F=2.607$, $p=0.025$). However, multiple regression analysis revealed that only religious affiliation ($\beta=0.360$, $p<0.001$) was significantly associated with K-MiLS.

DISCUSSION

This study aimed to explore the structure of meaning in the lives of patients with cancer through scale validation. This study demonstrates that the four subscales of the K-MiLS represent reliable and structurally sound measures. The four-factor structure, including “Harmony and Peace,” “Life Perspective, Purpose, and Goals,” “Benefits of Spirituality,” and “Confusion and Lessened Meaning,” is consistent with the results of a previous study.¹⁵ The overall reliability was 0.703, with a retest reliability of 0.928. The CFI, NFI, RMSEA, and

SRMR measurements met the criteria for a good model fit, suggesting that K-MiLS has an acceptable model fit. However, only the GFI did not surpass the acceptable threshold of 0.90, likely due to this study’s sample size. The GFI is known to be sensitive to sample size, and the sample size in this study was smaller than the typical sample size ($n=250$) for GFI.³⁶ In the case of reverse-scored item 15, it loaded redundantly on both the “Harmony and Peace” and “Life Perspective, Purpose, and Goals” domains. If duplicate loading occurs in scale items, the item can be included in a specific factor if there is a clear theoretical rationale.³⁷ In the case of the duplicated loading of item 15, the authors reached a consensus to include item 15 within the “Harmony and Peace” factor.

The intriguing aspect of the structure of meaning in the lives of patients with cancer was that they possessed perspectives and purposes in life while simultaneously experiencing confusion and a diminished sense of meaning. These results suggest that even if patients with cancer, who undergo surgery, radiation therapy, take medication, and experience side effects, discover the meaning of their lives, they may often experience confusion and a decrease in the sense of life’s meaning. The confusion and lessened meaning experienced by patients with cancer may also be part of the process of meaning-making³⁸ or searching for meaning.⁶

Table 3. The K-MiLS subscale intercorrelations (N=345)

Factor	Mean (SD)	1	2	3	4	PHQ9	GAD7	FCRI	FACT-G	PTGI	SCS	FSSQ	Cronbach’s α
1	3.438 (1.070)	1				-0.536**	-0.513**	-0.407**	0.603**	0.618**	0.613**	0.416**	0.832
2	2.783 (1.781)	0.486**	1			-0.233**	-0.158*	-0.108**	0.239**	0.609**	0.339**	0.271**	0.976
3	3.877 (0.996)	0.673**	0.419**	1		-0.388**	-0.305**	-0.307**	0.483**	0.660**	0.475**	0.396**	0.906
4	2.793 (1.059)	-0.586**	-0.256**	-0.515**	1	0.505**	0.418**	0.392**	-0.575**	-0.398**	-0.489**	-0.374**	0.885
Total	7.304 (3.818)	0.845**	0.783**	0.787**	-0.695**	-0.500**	-0.413**	-0.353**	0.566**	0.740**	0.590**	0.450**	0.703

* $p<0.05$; ** $p<0.01$. 1=Harmony and Peace, 2=Benefits of Spirituality, 3=Life Perspective, Purpose, and Goals, 4=Confusion and Lessened Meaning. K-MiLS, Meaning in Life Scale among Korean patients; PHQ-9, Patient Health Questionnaire-9; GAD-7, Generalized Anxiety Disorder-7; FCRI, Fear of Cancer Recurrence Inventory; FACT-G, Functional Assessment of Cancer Therapy-General; PTGI, Posttraumatic Growth Inventory; SCS, Self-Compassion Scale; FSSQ, Functional Social Support Questionnaire

Table 4. Hierarchical regression analysis results for mental health as predicted by K-MiLS

Outcome	Control variables	Total R ²	Adj. R ²	B	SE	(β)	t (p)
PHQ-9	Age, sex, parental, marital status, years since diagnosis	0.294	0.281	-0.670	0.064	-0.497	-10.471***
GAD-7	Age, sex, parental, cancer type, cancer stage	0.238	0.224	-0.471	0.058	-0.403	-8.159***
PTGI	Sex, religion, years since diagnosis	0.556	0.551	20.996	0.165	0.712	18.137***
FACT-G	Sex, cancer recurrence	0.348	0.343	20.151	0.166	0.572	12.950***

*** $p<0.001$. K-MiLS, Meaning in Life Scale among Korean patients; PHQ-9, Patient Health Questionnaire-9; GAD-7, Generalized Anxiety Disorder-7; PTGI, Posttraumatic Growth Inventory; FACT-G, Functional Assessment of Cancer Therapy-General

“Harmony and Peace” appear to be related to the affective component among the meaning structures proposed by Reker and Wong.¹² In some previous studies, the emotional aspect that manifested in the meaning of life for patients with cancer was suggested to be “satisfaction”³⁹; however, this remains unclear. This study suggests that the affective component in the meaning of life for patients with cancer is associated with harmony or peace.

Finally, the benefits of spirituality are associated with religious faith and spirituality.¹⁵ Religion often provides a belief system necessary for understanding and enduring suffering and loss and is central to life’s purpose.⁴⁰ In modern times, while the term “religion” denotes organized, social, and traditional beliefs and practices, “spirituality” is often relevant to individualistic, transcendent, and relatedness concepts.⁴¹ These findings suggest that spirituality and religion are important components of meaning in the lives of patients with cancer, not only in North America, where the scale was developed but also in areas with different religious and cultural backgrounds.

The factor analysis results compared with those from the original author’s study reveal that the four-factor structure and the included items were consistent. However, the original research showed the first two factors as “Harmony and Peace” and “Life Perspective, Purpose, and Goals.” In contrast, the factor analysis performed on the entire participant group in the present study ($n=345$) indicated that the first two factors were “Benefits of Spirituality” and “Confusion and Lessened Meaning.” Based on prior research indicating that sufficient time is necessary to discover the meaning of life, the original author conducted an EFA on cancer patients who had completed treatment, had no recurrence, and had been diagnosed for 2 years. Considering that approximately 45% of the participants in this study were diagnosed within 2 years, cancer patients may experience confusion regarding the meaning of life during the initial stages of diagnosis, where spiritual aspects may be particularly significant.

In the factor analysis conducted on the entire participant group ($n=345$), item 15, “I have trouble feeling peace of mind,” loaded above 0.4 on both the “Harmony and Peace” and “Life Perspective, Purpose, and Goals” factors. These results suggest that Korean cancer patients tend to associate their life perspective with a sense of inner peace.

To assess the convergent validity of the MiLS, the negative correlation observed between anxiety, depression, and meaning in life was aligned with previous research. These results suggest that individuals who lead meaningful lives may reduce depressive affect by living purposefully and proactively.⁴² The benefits of finding meaning in life may also be associated with anxiety.⁴³ The convergent validity results also exhibit a sense of meaning in life, which is positively correlated with

life satisfaction and social support, as supported by prior research.⁴⁴ Furthermore, consistent with a previous study,⁴⁵ post-traumatic growth had a strong positive correlation, with correlations exceeding 0.7.³⁵

Notably, the correlation between meaning in life and self-compassion was the second strongest correlation, following the correlation with post-traumatic growth. The measure of self-compassion was composed of three components: treating oneself with care during distressing situations (self-kindness vs. self-judgment), recognizing that suffering is a normal part of life (common humanity vs. isolation), and not downplaying or over-identifying negative thoughts but experiencing them in a balanced manner (mindfulness vs. over-identification).^{30,46} Therefore, individuals with high self-compassion are likely to observe experienced adverse events from a balanced perspective, accept themselves experiencing such events, and potentially modify past life goals to find realistic goals and meaning.⁴⁷ While several studies examined the relationship between self-compassion and meaning in life,⁴⁷⁻⁵⁰ to our knowledge, only one study involved patients with cancer.⁵¹

In a controlled model with demographic and disease-related variables, the K-MiLS demonstrated statistically significant variations ranging from 22.4% to 55.1% in depression, anxiety, quality of life, and post-traumatic growth. Among the sociodemographic variables, the K-MiLS correlated with age, marital status, parental status, time after treatment, and religious affiliation. In the multiple regression analysis, no disease-related variables significantly correlated with the K-MiLS except religious affiliation. Religious affiliation was a significant predictor in the multiple regression analysis. This finding suggests that religious affiliation is an important aspect in the lives of patients with cancer that contributes to meaning in their lives.

Study limitations and future directions

This study has several limitations. First, in the CFA, the GFI did not exceed 0.90. This may be attributed to the relatively small sample size. Therefore, future studies should reconfirm the model fit using a larger sample size. Second, this study predominantly comprised female cancer patients in South Korea, with a relatively small representation of individuals aged 60 years and above. This limitation raises concerns about the generalizability of our results to a broader population of patients with cancer. Finally, this study presented a multidimensional structure of meaning in the lives of cancer patients but did not propose a specific model for how cognitive, emotional, and spiritual aspects interact with each other. Future research appears necessary to conduct integrated studies on the mechanisms of cognitive and emotional spiritual factors in the aspect of meaning in life among cancer patients, includ-

ing each protective and risk factor.

Conclusion

The K-MiLS exhibited a multidimensional four-factor structure similar to its original version, establishing its reliability and validity in evaluating the meaning of life among cancer survivors. It may serve as a valuable tool for assessing the meaning of life for cancer survivors and implementing meaning-centered interventions.

Supplementary Materials

The Supplement is available with this article at <https://doi.org/10.30773/pi.2024.0236>.

Availability of Data and Material

The datasets used and analyzed during the current study are available from the corresponding author upon request.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

Author Contributions

Conceptualization: all authors. Data curation: Namgu Kang, Eun-Seung Yu. Formal analysis: Namgu Kang, Hae-Yeon Yun, Eun-Seung Yu. Funding acquisition: Eun-Seung Yu. Investigation: Namgu Kang, Hae-Yeon Yun, Eun-Seung Yu. Methodology: all authors. Project administration: all authors. Resources: Young Ae Kim, Hye Yoon Park, Jong-Heun Kim, Sun Mi Kim. Software: Eun-Seung Yu. Supervision: Eun-Seung Yu. Validation: all authors. Visualization: Namgu Kang. Writing—original draft: Namgu Kang, Eun-Seung Yu. Writing—review & editing: all authors.

ORCID iDs

Namgu Kang	https://orcid.org/0009-0007-9887-8792
Hae-Yeon Yun	https://orcid.org/0009-0001-9861-542X
Young Ae Kim	https://orcid.org/0000-0002-3819-0028
Hye Yoon Park	https://orcid.org/0000-0003-4114-5102
Jong-Heun Kim	https://orcid.org/0000-0003-3360-9464
Sun Mi Kim	https://orcid.org/0000-0003-4131-0542
Eun-Seung Yu	https://orcid.org/0000-0001-7388-9195

Funding Statement

This study was supported by the National R&D Program for Cancer Control, Ministry of Health and Welfare, Republic of Korea (grant number HA21C0100).

Acknowledgments

The authors thank all cancer patients who participated in this study.

REFERENCES

- Spiegel D, Classen C. Group therapy for cancer patients: a research-based handbook of psychosocial care. New York: Basic Books; 2000.
- Janoff-Bulman R. Assumptive worlds and the stress of traumatic events: applications of the schema construct. *Soc Cogn* 1989;7:113-136.
- Tedeschi RG, Calhoun L. Posttraumatic growth: a new perspective on psychotraumatology. *Psychiatr Times* 2004;21:58-60.
- Triplett KN, Tedeschi RG, Cann A, Calhoun LG, Reeve CL. Posttraumatic growth, meaning in life, and life satisfaction in response to trauma. *Psychol Trauma* 2012;4:400-410.
- Park CL, Edmondson D, Fenster JR, Blank TO. Meaning making and psychological adjustment following cancer: the mediating roles of growth, life meaning, and restored just-world beliefs. *J Consult Clin Psychol* 2008;76:863-875.
- Steger ME, Frazier P, Oishi S, Kaler M. The meaning in life questionnaire: assessing the presence of and search for meaning in life. *J Couns Psychol* 2006;53:80-93.
- Vehling S, Lehmann C, Oechsle K, Bokemeyer C, Krüll A, Koch U, et al. Global meaning and meaning-related life attitudes: exploring their role in predicting depression, anxiety, and demoralization in cancer patients. *Support Care Cancer* 2011;19:513-520.
- Crumbaugh JC, Maholick LT. An experimental study in existentialism: the psychometric approach to Frankl's concept of noogenic neurosis. *J Clin Psychol* 1964;20:200-207.
- Antonovsky A. Unraveling the mystery of health: how people manage stress and stay well. San Francisco: Jossey-Bass; 1987.
- Mascaro N, Rosen DH, Morey LC. The development, construct validity, and clinical utility of the spiritual meaning scale. *Pers Individ Differ* 2004;37:845-860.
- Reker GT, Peacock EJ. The life attitude profile (LAP): a multidimensional instrument for assessing attitudes toward life. *Can J Behav Sci* 1981;13:264-273.
- Reker GT, Wong PTP. Aging as an individual process: toward a theory of personal meaning. In: Birren JE, Bengtson VL, editors. *Emergent theories of aging*. New York: Springer, 1988, p.214-246.
- Brandstätter M, Baumann U, Borasio GD, Fegg MJ. Systematic review of meaning in life assessment instruments. *Psychooncology* 2012;21:1034-1052.
- Reker GT. Theoretical perspective, dimensions, and measurement of existential meaning. In: Reker GT, Chamberlain K, editors. *Exploring existential meaning: optimizing human development across the life span*. Thousand Oaks: Sage Publications, Inc, 2000, p.39-56.
- Jim HS, Purnell JQ, Richardson SA, Golden-Kreutz D, Andersen BL. Measuring meaning in life following cancer. *Qual Life Res* 2006;15:1355-1371.
- Cocio GS, Soto PG. [Validation of meaning in life scale modified to evaluate the spiritual dimension in a Chilean and Latin-American cancer population on palliative care]. *Gac Mex Oncol* 2016;15:121-127. Spanish
- Cabrera-Nguyen P. Author guidelines for reporting scale development and validation results in the Journal of the Society for Social Work and Research. *J Soc Social Work Res* 2010;1:99-103.
- Worthington RL, Whittaker TA. Scale development research: a content analysis and recommendations for best practices. *Couns Psychol* 2006;34:806-838.
- Costello AB, Osborne J. Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Pract Assess Res Eval* 2005;10:7.
- Gorsuch RL. Factor analysis (2nd ed). Hillsdale: Lawrence Erlbaum Associates; 1983.
- MacCallum RC, Widaman KF, Zhang S, Hong S. Sample size in factor analysis. *Psychol Methods* 1999;4:84-99.
- Kline RB. Principles and practice of structural equation modeling. New York: Guilford Press; 2010.
- Wild D, Grove A, Martin M, Eremenco S, McElroy S, Verjee-Lorenz A, et al. Principles of good practice for the translation and cultural adaptation process for patient-reported outcomes (PRO) measures: report of the ISPOR task force for translation and cultural adaptation. *Value Health* 2005;8:94-104.
- Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. *JAMA* 1999;282:1737-1744.
- Simard S, Savard J. Fear of cancer recurrence inventory: development and initial validation of a multidimensional measure of fear of cancer recurrence. *Support Care Cancer* 2009;17:241-251.
- Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*

- 2006;166:1092-1097.
27. Cella DF, Tulsky DS, Gray G, Sarafian B, Linn E, Bonomi A, et al. The functional assessment of cancer therapy scale: development and validation of the general measure. *J Clin Oncol* 1993;11:570-579.
28. Kim H, Yoo HJ, Kim YJ, Han OS, Lee KH, Lee JH, et al. [Development and validation of Korean functional assessment cancer therapy-general (FACT-G)]. *Korean J Clin Psychol* 2003;22:215-229. Korean
29. Tedeschi RG, Calhoun LG. The posttraumatic growth inventory: measuring the positive legacy of trauma. *J Trauma Stress* 1996;9:455-471.
30. Neff KD. The development and validation of a scale to measure self-compassion. *Self Identity* 2003;2:223-250.
31. Broadhead WE, Gehlbach SH, de Gruy FV, Kaplan BH. The Duke-UNC functional social support questionnaire. Measurement of social support in family medicine patients. *Med Care* 1988;26:709-723.
32. McDonald RP, Ho MH. Principles and practice in reporting structural equation analyses. *Psychol Methods* 2002;7:64-82.
33. Schermelleh-Engel K, Moosbrugger H, Müller H. Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. *Methods Psychol Res* 2003;8:23-74.
34. Tabachnick BG, Fidell LS. Using multivariate statistics (6th ed). Boston: Pearson; 2013.
35. Ratner B. The correlation coefficient: its values range between +1/-1, or do they? *J Target Meas Anal Mark* 2009;17:139-142.
36. Lei M, Lomax RG. The effect of varying degrees of nonnormality in structural equation modeling. *Struct Equ Model* 2005;12:1-27.
37. Watkins MW. Exploratory factor analysis: a guide to best practice. *J Black Psychol* 2018;44:219-246.
38. Park CL. Making sense of the meaning literature: an integrative review of meaning making and its effects on adjustment to stressful life events. *Psychol Bull* 2010;136:257-301.
39. O'Connor K, Chamberlain K. Dimensions of life meaning: a qualitative investigation at mid-life. *Br J Psychol* 1996;87(Pt 3):461-477.
40. Pargament KI, Koenig HG, Perez LM. The many methods of religious coping: development and initial validation of the RCOPE. *J Clin Psychol* 2000;56:519-543.
41. Zinnbauer BJ, Pargament KI, Scott AB. The emerging meanings of religiousness and spirituality: problems and prospects. *J Pers* 1999;67:889-919.
42. Mascaro N, Rosen DH. Existential meaning's role in the enhancement of hope and prevention of depressive symptoms. *J Pers* 2005;73:985-1014.
43. Shiah YJ, Chang F, Chiang SK, Lin IM, Tam WC. Religion and health: anxiety, religiosity, meaning of life and mental health. *J Relig Health* 2015;54:35-45.
44. Zika S, Chamberlain K. On the relation between meaning in life and psychological well-being. *Br J Psychol* 1992;83(Pt 1):133-145.
45. Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J Pers Soc Psychol* 1989;57:1069-1081.
46. Neff K. Self-compassion: an alternative conceptualization of a healthy attitude toward oneself. *Self Identity* 2003;2:85-101.
47. Wong CCY, Yeung NC. Self-compassion and posttraumatic growth: cognitive processes as mediators. *Mindfulness* 2017;8:1078-1087.
48. Yela JR, Crego A, Gómez-Martínez MÁ, Jiménez L. Self-compassion, meaning in life, and experiential avoidance explain the relationship between meditation and positive mental health outcomes. *J Clin Psychol* 2020;76:1631-1652.
49. Phillips WJ, Ferguson SJ. Self-compassion: a resource for positive aging. *J Gerontol B Psychol Sci Soc Sci* 2013;68:529-539.
50. O'Dea MK, Igou ER, van Tilburg WA, Kinsella EL. Self-compassion predicts less boredom: the role of meaning in life. *Pers Individ Differ* 2022;186:111360.
51. Narimani M, Eyni S. Relationship between meaning of life, self-compassion and sense of coherence with perceived stress in cancer patients *IJCA* 2022;1:1-10.