

Factors Influencing Resilience of Older Patients with Cancer

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Abstract

Background/Objectives: This study is a descriptive study to understand causal attribution, coping, social support, and resilience of older patients with cancer and determine factors influencing their resilience, using a resilience model. The purpose of this study was to provide data for the development of resilience intervention programs for older cancer patients.

Methods/Statistical analysis: We conducted one-on-one interviews among 104 older cancer patients who were hospitalized in a university hospital or visited its outpatient clinics during the period from August 3 through October 28 in 2017.

Findings: Resilience of older cancer patients was significantly different by age ($t=2.010$, $p=.047$), economic status ($F=3.370$, $p=.038$), and subjective health status ($F=4.559$, $p=.013$). Older cancer patients' resilience was negatively correlated with causal attribution ($r=-.208$, $p=.034$) and positively correlated with coping ($r=.517$, $p<.001$) and social support ($r=.394$, $p<.001$). Factors influencing their resilience were planning ($p=.002$) in the personal coping category and family support ($p=.022$) in the social support category.

Improvements/Applications: The results suggest that development of intervention programs that can enhance coping and family support is needed to improve resilience of older cancer patients. It makes it possible to write about the results of the improved research and other applications.

Keywords: Old patients, Causal attribution, Coping, Social support, Cancer

1. Introduction

According to the national cancer registration statistics, there are over 2.14 million patients with cancer in South Korea, and one in every 25 South Koreans has cancer[1]. The probability of developing cancer, with 83 years of life expectancy, is 37.9%. The number of cancer patients with age ≥ 65 years is 990,000, accounting for 46.4% of all cancer patients. This is equivalent to 12.9% of the older population (age ≥ 65 years), with one in every 8 older people having cancer, one in every 6 men and one in every 10 women having cancer. Due to early screening and diverse treatment methods, the 5-year survival rate of cancer patients in the last 5 years is 70.7%, 16.7% higher than 15 years ago. The long-term survival rate of cancer patients is anticipated to continue to increase, and so is the length of life as a cancer survivor[1].

Older patients with cancer have difficulties in treatment because they have deteriorated memory and judgment compared to younger people and often forget or remember incorrectly information related to their diseases[2]. Many older cancer patients suffer from negative emotions, such as depression and despair, and physical pain due to fear of and adverse effects from various treatments, e.g., surgery, chemotherapy, radiation therapy, as well as the pain from the disease itself[3]. For older patients, cancer may mean pain, distress, sudden realization of death, losing control of life, and imbalance in the relationship with meaningful people[4,5].

However, as the cancer survival rate increases, there is an increasing number of cancer patients who overcome this pain through continuous care. Also, the ability of individuals to recover psychologically in the face of adversity, called resilience, has emerged as a critical concept in the improvement of the quality of life of cancer patients[6,7].

Cancer patients presume their cause of cancer when they are diagnosed, and their causal attribution can play an important role in deciding their behaviors and responses to circumstances in the course of treatment[8,9]. In

addition, it is important to understand causal attribution because how to cope with cancer management may vary across individuals depending upon the cause of cancer that they perceive. To improve resilience of cancer patients, the ability to effectively cope with cancer is needed, which may positively affect resilience[10].

Resilience is an emotional vitality or positive personality that mediates negative effects of stress and enhances adaptation[11]. It has been shown that resilience has positive influence on cancer patients' negative psychology, such as depression, stress, suicide, uncertainty, as well as self-efficacy, adaptation, and quality of life[10,12-15].

In South Korea, there have been studies on the resilience of cancer patients with gastrointestinal cancer, breast cancer, prostate cancer, gynecological cancer, and blood cancer[12,13,16-18]. However, for older cancer patients, only one study was conducted in patients with gastric cancer[19]. Therefore, it is important to understand the resilience and factors influencing resilience among an increasing number of older cancer patients.

This study constructed a conceptual framework based on the Adolescent Resilience Model developed in patients with chronic diseases, including cancer[20]. That model presented risk factors and protective factors as factors influencing resilience. Risk factors consisted of disease-related risk factors and personal risk factors. Protective factors consisted of personal protective factors, family protective factors, and social protective factors. Resilience is supposed to impact quality of life. Applying that model to this study, a disease-related risk factor is cancer in older patients, and a personal risk factor is causal attribution of cancer. A personal protective factor is coping, and a family and social protective factor is social support (family and friends). This study assumed that these factors affect resilience.

The purpose of this study was to determine factors influencing resilience of older cancer patients on the basis of the Adolescent Resilience Model and provide data for the development of resilience intervention programs for older cancer patients.

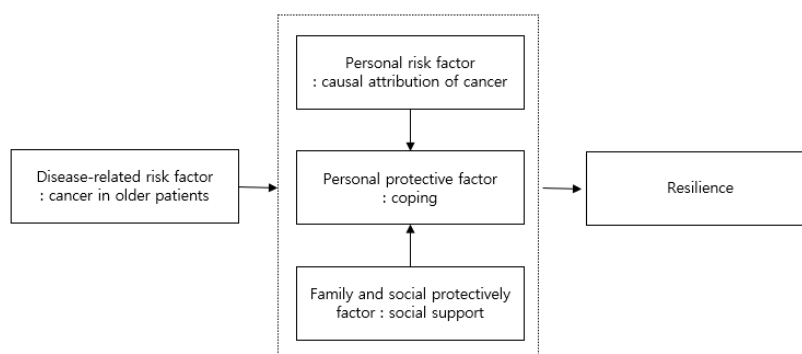


Figure 1. Conceptual framework

1.1. Objectives

This study aims to determine factors influencing the resilience of older cancer patients. Specific objectives are as follows.

- To determine older cancer patients' causal attribution of cancer, coping social support, and resilience
- To determine the relationships between older cancer patients' causal attribution of cancer, coping, social support, and resilience
- To determine factors influencing resilience of older cancer patients

2. Materials and Methods

2.1. Study design

This study is a descriptive study to understand older cancer patients' causal attribution, coping, social support, and resilience, as well as factors influencing resilience, among older cancer patients who were hospitalized in a university hospital or visited its outpatient clinics.

2.2. Study participants

The study participants were older cancer patients who were hospitalized in a university hospital or visited its outpatient clinics between September and November in 2017. The sample size was calculated with the significance level .05, effect size .20, power .85, and 10 predictors using the G*power 3.1.5 program. The minimum sample size was 100, and the targeted sample size was 120 in consideration of dropouts. The final number of participants was 104. The criteria for selection of participants were as follows:

- 1) Cancer patients with age ≥ 65 years
- 2) Patients with an Eastern Cooperative Oncology Group (ECOG) performance status of 0 or 1
- 3) Patients with clear consciousness and capable of communication
- 4) Patients who understood the purpose of the study and provided a written agreement to participate in the study
- 5) Patients who knew that they had been diagnosed with cancer

2.3. Study instruments

2.3.1. Causal attribution of cancer

This study used a tool for causal attribution of cancer developed by Kim[8] and revised by Kim & So[21]. It consists of 24 items, with overwork (4 items), fate (7 items), stress (7 items), and constitution (6 items). A Likert 4-point scale was used, with 0 indicating 'not at all' and 3 indicating 'very much'. The higher the total score, the higher the causal attribution. Cronbach's α in this study was .84, while it was .72 in a study by Kim & So[21].

2.3.2. Coping

This study used a tool on coping developed by Moorey et al.[22] and revised by Kim et al.[23]. It consists of 21 items, with personal coping (14 items), interpersonal coping (7 items), active coping (5 items), positive restructuring (6 items), and planning (3 items). A Likert 4-point scale was used, with 1 indicating 'not at all' and 4 indicating 'very often'. Cronbach's α in this study was .92, while it was .90 in a study by Kim et al.[23].

2.3.3. Social support

This study used a tool on social support developed by Zimet et al.[24] and translated by Shin & Lee (1999). The original tool consisted of 3 items, family support, friend support, and special support. This study used family support and friend support. The tool used consists of 8 items, with family support (4 items) and friend support (4 items). A Likert 5-point scale was used, with 1 indicating 'very not' and 5 indicating 'very much'. The higher the total score, the higher social support. Cronbach's α .91 in this study and a study by Shin & Lee[25].

2.3.4. Resilience

This study used a tool on resilience developed by Wagnil & Young[11] and translated and revised by Kim & Shin [26]. The tool consists of 14 items. A Likert 7-point scale was used, with 1 indicating 'not at all' and 7 indicating 'very much'. The higher the total score, the higher social resilience. Cronbach's α in this study was .88, while it was .97 in a study by Kim & Shin[26].

2.4. Data collection

Data were collected in older cancer patients who were hospitalized in K University Hospital in D city or visited its outpatient clinics from August 3 through October 28 in 2017. For the data collection, we received written permission from the patients' physicians on the patients' participation in the study. For the ward and outpatient visits, we explained the study purpose and data collection process to the research manager of the nursing department and received the permission on the data collection. Because the study participants were older cancer patients (age ≥ 65 years) and they might have difficulties answering self-questionnaires, researchers and research assistants visited the wards and outpatient clinics and conducted one-on-one interviews. To maintain consistency in understanding and interpretation of the questionnaires, the researchers and research assistants conducted 4 discussions. First, it was confirmed that each sentence of the questionnaires was interpreted in the same meaning by all.

When research assistants interpreted differently, researchers explained the correct meaning and educated the

research assistants. After completing the training, researchers and research assistants visited the wards and outpatient clinics, explained the purpose and methods of the study to the older cancer patients, received written agreements from patients who agreed to participate in the study, and conducted interviews. For the participants who were able to and wanted to perform self-surveys, we distributed questionnaires to and collected from those participants.

2.5. Data Analysis

We analyzed collected data using the SPSS/WIN 23.0 program. Specific statistical analysis methods used were as follows.

- 1) General characteristics of older cancer patients were analyzed by descriptive statistics.
- 2) Causal attribution, coping, social support, and resilience of older cancer patients were analyzed by mean and standard deviation.
- 3) Differences in causal attribution, coping, social support, and resilience of older cancer patients were analyzed by t-tests and ANOVAs, and Scheffe tests were used for post-hoc analyses.
- 4) The relationships between cancer attribution, coping, social support, and resilience of older cancer patients were analyzed by Pearson's correlation coefficient.
- 5) Multiple regression analyses were used to determine factors influencing resilience of older cancer patients.

2.6. Ethical consideration

This study was conducted after obtaining approval from the Institutional Review Board of K University Hospital (KYUH 2017-04-003-002). We explained the purpose and methods of the study, as well as voluntary consent on participation, to the study participants before distributing the questionnaires. After patients agreed on data collection, written consent forms were completed prior to the interviews. We explained anonymity of the survey and data storage to the participants. We also explained to them that they could discontinue the participation at any time and there would be no disadvantages from it.

3. Results

2.1. General characteristics of older cancer patients

79 patients (76.0%) were 65-70 years of age, and men accounted for 61 (58.7%). 78 patients (75.0%) were married, 54 (51.9%) had religion, and 38 (36.5%) were under elementary school graduation. 95 patients (91.3%) were unemployed, and 67 (64.4%) were in the middle class. As to subjective health status, 54 patients (51.9%) were healthy. 55 (52.9%) were diagnosed with digestive system cancer, and the third stage (37.5%) was the most common cancer stage. 69 patients (66.3%) received chemotherapy (66.3%), and 89 (85.6%) had family assistance. 88 patients (84.6%) had cohabitants (Table 1).

Table 1: General characteristics of older cancer patients

Category		n(%)
Age	65~70	79 (76.0)
	≥ 71	25 (24.0)
Sex	Male	61 (58.7)
	Female	43 (41.3)
Marriage	Married	78 (75.0)
	Widowed	21 (20.2)
	Divorced	5 (4.8)
Religion	Yes	54 (51.9)
	No	50 (48.1)
Educational attainment	Under elementary	38 (36.5)
	Middle school	32 (30.8)
	High school	22 (21.2)
	College graduation or higher	12 (11.5)
Economic status	Insufficient	31 (29.8)

	Middle	67 (64.4)
	Sufficient	6 (5.8)
Subjective health status	Not healthy	12 (11.5)
	Fair	38 (36.5)
	Healthy	54 (51.9)
Diagnostic name	Gastrointestinal cancer	55 (52.9)
	Gynecological cancer	20 (19.2)
	Urinary tract cancer	11 (10.6)
	Other cancer	15 (14.4)
Surgery	Yes	65 (62.5)
	No	39 (37.5)
Cancer stage	1	29 (27.9)
	2	20 (19.2)
	3	39 (37.5)
	4	16 (15.4)
Care type	Nursing facility	2 (1.9)
	Family	89 (85.6)
	Living alone	13 (12.5)

2.2. Causal attribution, coping, social support, and resilience of older cancer patients

In causal attribution, overwork had the highest score of $2.13 \pm .72$, followed by constitution ($1.95 \pm .46$), stress ($1.86 \pm .43$), and fate ($1.70 \pm .65$). As to coping, personal coping was $2.67 \pm .52$, and interpersonal coping was $2.82 \pm .74$. Regarding personal coping, active coping was $3.11 \pm .68$, positive restructuring was $3.05 \pm .64$, and planning was $2.20 \pm .75$. For social support, family support was $4.03 \pm .81$, and friend support was 3.24 ± 1.06 . Resilience was $5.26 \pm .76$ (Table 2).

Table 2: Care attribution, coping, social support, and resilience of older cancer patients

Variable		M \pm SD	Range
Causal attribution of cancer	Overwork	2.13 \pm .72	1~4
	Fate	1.70 \pm .65	
	Stress	1.86 \pm .43	
	Constitution	1.95 \pm .46	
	Total	1.88 \pm .40	
Coping	Personal coping	2.67 \pm .52	1~4
	Active coping	3.11 \pm .68	
	Planning	2.20 \pm .75	
	Positive restructuring	3.05 \pm .64	
	Interpersonal coping	2.82 \pm .74	
	Total	2.73 \pm .52	
Social support	Family support	3.63 \pm .81	1~5
	Friend support	4.03 \pm .81	
	Total	3.24 \pm 1.06	
Resilience		5.26 \pm .76	1~7

2.3. Differences in causal attribution, coping, social support, and resilience by general characteristics of older cancer patients

There was no statistically significant difference in causal attribution by general characteristics, while there were significant differences in coping by sex ($t=-2.037$, $p=.044$), economic status ($F= 5.532$, $p=.005$), and diagnostic name ($F=4.107$, $p=.004$). There were significant differences in social support by care type ($F=3.767$, $p=.026$)

and in resilience by age ($t=2.010$, $p=.047$), economic status ($F=3.370$, $p=.038$), and subjective health status ($F=4.559$, $p=.013$) (Table 3).

Table 3: Causal attribution, coping, social support, and resilience by general characteristics

Category		Causal attribution of cancer		Coping		Social support		Resilience	
		M±SD	t/F (p)	M±SD	t/F (p)	M±SD	t/F (p)	M±SD	t/F (p)
Age	65~70	1.85±.41	-1.307	2.73±.51	0.244	3.63±.83	-0.082	5.34±.69	2.01
	≥ 71	1.97±.36	-0.194	2.70±.57	-0.807	3.65±.73	-0.935	4.99±.92	-0.047
Sex	Male	1.93±.42	1.523	2.64±.53	-2.037	3.56±.84	-1.054	5.24±.77	-0.255
	Female	1.81±.36	-0.131	2.85±.49	-0.044	3.73±.75	-0.295	5.28±.76	-0.799
Marriage	Married	1.90±.39		2.72±.52	0.959	3.70±.77	2.027	5.28±.79	0.072
	Widowed	1.79±.38	0.64	2.80±.55	-0.387	3.56±.79	-0.137	5.22±.71	-0.931
	Divorced	1.87±.64	-0.53	2.44±.43		2.98±1.24		5.19±.49	
Religion	Yes	1.85±.42	-0.839	2.82±.53	1.889	3.59±.88	-0.535	5.36±.72	1.384
	No	1.91±.38	-0.403	2.63±.50	-0.062	3.68±.73	-0.594	5.15±.80	-0.169
Educational attainment	Under elementary	1.88±.40	0.644	2.62±.47	1.849	3.50±.79	2.139	5.11±.72	2.005
	Middle school	1.87±.41	-0.588	2.77±.53	-0.143	3.51±.80	-0.1	5.19±.69	-0.118
	High school	1.82±.31		2.91±.49		3.99±.60		5.39±.99	
	College graduation or higher	2.02±.51		2.61±.63		3.73±1.07		5.67±.38	
Economic status	Insufficient ^a	1.93±.43	0.376	2.54±.58	5.532	3.44±.89	2.641	4.98±.89	3.37
	Middle ^b	1.86±.40	-0.688	2.77±.47	-0.005	3.67±.74	-0.076	5.36±.68	-0.038
	Sufficient ^c	1.87±.36		3.23±.36	a,b<c	4.23±.82		5.60±.49	a<b<c
Subjective health status	Not healthy ^a	1.98±.21	1.354	2.61±.62	0.4	3.54±1.10	0.608	5.25±1.09	4.559
	Fair ^b	1.93±.39	-0.263	2.72±.53	-0.671	3.54±.66	-0.547	4.99±.70	-0.013

	Healthy ^c	1.82±.43		2.76±.50		3.72±.83		5.46±.66	b<a<c
Diagnostic name	Gastrointestinal cancer ^a	1.89±.44	0.291	2.55±.46	4.107	3.49±.88	0.984	5.17±.79	1.271
	Gynecological cancer ^b	1.86±.31	-0.883	2.86±.48	-0.004	3.76±.70	-0.42	5.30±.62	-0.286
	Urinary tract cancer ^c	1.85±.44		2.91±.59	a<b,e<c<d	3.77±.64		5.09±1.08	
	Other cancer ^d	1.83±.39		3.04±.52		3.84±.75		5.61±.41	
	Metastatic cancer ^e	2.08±.22		2.84±.63		3.92±.75		5.52±.84	
Surgery	Yes	1.86±.39	-0.593	2.69±.52	-0.868	3.60±.80	-0.481	5.26±.77	-0.024
	No	1.91±.43	-0.555	2.78±.52	-0.388	3.68±.83	-0.632	5.26±.75	-0.981
Cancer stage	1	1.88±.44	1.955	2.84±.58	0.998	3.75±.86	0.849	5.42±.59	0.864
	2	1.73±.35	-0.126	2.67±.51	-0.397	3.79±.82	-0.47	5.32±.85	-0.462
	3	1.89±.40		2.73±.49		3.50±.77		5.18±.72	
	4	2.05±.35		2.58±.48		3.55±.78		5.08±1.00	
Care type	Nursing facility ^a	2.00±.35	0.689	2.09±.18	1.563	3.56±.62	3.767	4.71±.20	0.524
	Family ^b	1.89±.39	-0.504	2.74±.50	-0.215	3.72±.75	-0.026	5.27±.78	-0.594
	Living alone ^c	1.76±.48		2.74±.63		3.08±1.02	a<b<c	5.25±.69	

2.4. Relationships between causal attribution, coping, social support, and resilience of older cancer patients

Older cancer patients' causal attribution was negatively correlated with coping ($r=-.201$, $p=.041$), social support ($r=-.249$, $p=.011$), and resilience ($r=-.208$, $p=.034$). Coping was positively correlated with social support ($r=.478$, $p<.001$) and resilience ($r=.517$, $p<.001$). Social support was positively correlated with resilience ($r=.394$, $p<.001$) (Table 4).

Table 4: Relationships between causal attribution, coping, social support, and resilience of older cancer patients

	Causal attribution of cancer	Coping pattern evaluation	Social support
	r(p)		
Coping	-.201 (.041)		
Social support	-.249 (.011)	.478 (<.001)	
Resilience	-.208 (.034)	.517 (<.001)	.394 (<.001)

2.5. Factors influencing resilience of older cancer patients

The explanatory power of the multiple regression analysis was 29.7%. Factors influencing the resilience of older cancer patients were planning in personal coping ($p=.002$) and family support ($p=.022$) in social support (Table 5).

Table 4: Factors influencing resilience of older cancer patients

		B	SE	β	t	p	
	Constant	3.109	.579		5.366	<.001	
Causal attribution of cancer	Overwork	.054	.106	.052	.512	.610	
	Fate	-.140	.118	-.120	-1.181	.241	
	Stress	.014	.206	.008	.066	.947	
	Constitution	-.069	.172	-.042	-.404	.687	
Coping	Personal coping	Active coping	-.071	.133	-.064	-.534	.595
		Planning	.341	.106	.338	3.215	.002
		Positive restructuring	.158	.141	.133	1.121	.265
	Interpersonal coping	.081	.126	.078	.369	.524	
Social support	Family support	.268	.115	.285	2.335	.022	
	Friend support	.020	.079	.028	.259	.796	
$R^2 = .362$,Adjusted $R^2 = .297$, $F= 5.286$, $p<.001$							

4. Discussion

Recently the number of older cancer patients has been rapidly rising with the increase in the older population. Therefore, older cancer patients' ability to understand and overcome their diseases is important. This study investigates causal attribution, coping, social support, and resilience of older cancer patients, as well as their relationships. Additionally, this study determines strategies to improve older cancer patients' resilience by understanding factors influencing their resilience.

In this study among older cancer patients, the coping score was 2.67 ($\pm.52$) on a scale of 4 in personal coping and 2.82 ($\pm.74$) in interpersonal coping. These results are similar to a previous study conducted among women with breast cancer receiving anti-cancer therapy that showed 2.68 ($\pm.62$) and 2.72 ($\pm.87$) in personal coping and interpersonal coping, respectively[27], while higher than another study conducted in gastric cancer patients that showed 2.24 ($\pm.40$) and 2.55 ($\pm.46$) in personal and interpersonal coping, respectively[28].

Compared with a previous study[28] in which the largest group was patients with 3-4 months post diagnosis and the majority was patients in cancer stage 1, in this study the largest group was patients in cancer stage 3. In the early stages of cancer diagnosis, patients may experience negative emotions denying or rejecting their diagnosis, and uncertainty about the disease increases. High uncertainty about diseases reduces coping of cancer patients. The higher the negative emotions, the lower the coping[29,30]. Thus, in the earlier stages of cancer, patients and their families may not have sufficient planning and preparation to cope with cancer.

This study found that social support for older cancer patients was relatively high with family support being 3.63 ($\pm.81$) on a 5-point scale and friend support being 4.03 (± 1.06). Friend support in this study is higher than a previous study[31] in which family support was 3.71 ($\pm.85$) and friend support was 3.54 ($\pm.84$). This may be because in this study patients with age 65-70 years accounted for the 76.0%, and 51.9% answered that they were "healthy", implying that many patients were having social, economic life or outside activities. Given that older individuals have poor physical function and lose social roles and social support, maintaining close relationships with meaningful other people and promoting social activities will help overcome diseases. In this study, resilience of older cancer patients was 5.26 ($\pm.76$) on a 7-point scale. This is higher than 4.96 ($\pm.80$) among colon cancer patients in a previous study[32] and 4.50 ($\pm.53$) among lung cancer patients in another study[33]. This may be because in this study patients had various degrees of severity and a higher level of hope since the majority was in stage 1.

Also, in this study, causal attribution had a negative correlation with resilience ($r=-.208$, $p=.034$). Coping ($r=.517$, $p<.001$), and social support ($r=.394$, $p<.001$) had a positive correlation. This is consistent with a previous study that found a significant correlation between cancer patients' resilience, hope, and family

support[34]. Cancer patients are influenced by various factors, such as social support, coping, and hope, to adapt to physical and psychological changes. Among them, social support reduces negative emotions and is helpful for positive coping in the treatment of diseases.

In addition, this study found that planning in personal coping affects resilience. That is, the better planning is, the higher the resilience is. Cancer patients' coping refers to cognitive and behavioral efforts to adapt physically and psychologically by utilizing their resources to reduce threats to their diseases. A study by Lee et al.[35] found that coping directly affected adaptation of cancer patients. This is consistent with the results of the current study if resilience is considered the same concept as adaptation. The highest scores in the coping questions in this study were seen in 'I thought the current situation in a way helpful to me', 'I was determined to overcome cancer', 'I thought about positive aspects of my life', and 'I thought about what I still have in my life'. These are all included in the concept of positive restructuring (cognitive reconstruction). Cancer patients not only experience negative emotions in the process of overcoming their crisis, but also make efforts to utilize their social resources to increase their understanding of other people and overcome dangerous situations. Through this process, they reflect on the meaning of life and grow[36]. Therefore, to improve resilience of older cancer patients, development of strategies to improve coping will be needed.

The second factor influencing resilience was family support. A previous study also reported family support as a factor influencing older patients with gastric cancer[19]. Another study, although it did not classify social support into family support and friend support, found that social support enabled cancer patients to better cope with diseases and adapt fast to changes as a psychological intervention that led to successful coping with diseases. In addition, it was found that the higher social support is, the lower patients' depression is, and social support affected resilience. In a previous study by Shin & Son[37], clinicians' support reduced hospitalization stress more than family stress did in patients receiving chemotherapy. This may be because in this study 62.5% of the patients had already undergone surgery, and 85.6% of the patients had family assistance. As such, the study results varied since the types and stages of cancer varied in older patients. Therefore, continuous research on older cancer patients' resilience and social support will be needed. Based on the results of this study, it will be necessary to develop intervention programs to improve resilience of older cancer patients. This study has limitations in generalization of the results because it was conducted only in one university hospital, which warrants larger studies among older cancer patients in the future. Also, this study did not perform analysis by the type and stage of cancer. Future studies will need to investigate factors influencing older patients' resilience by the type and stage of cancer and develop patient-customized resilience intervention programs.

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