



**Resilience and Health-Related Quality of Life Among Persons
with Lung Cancer Completing Chemotherapy in China***
**ความเข้มแข็งทางใจและคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพในผู้ที่เป็นมะเร็งปอด
ที่ได้รับยาเคมีบำบัดครบ ในสาธารณรัฐประชาชนจีน***

Hua	Li **	ห้าว	ลี่**
Chomphoonut	Sirat***	ชมพูนุท	ศรีรัตน์***
Chiraporn	Tachaudomdach****	จิราภรณ์	เตชะอุดมเดช****

Abstract

Chemotherapy is the main treatment for lung cancer and will affect health-related quality of life (HRQoL). Moreover, chemotherapy can cause psychological problems which directly affect a patient's resilience. The objectives of this study were to examine resilience and HRQoL, and the relationship between resilience and HRQoL among persons with lung cancer completing chemotherapy. Purposive sampling was used to recruit 134 participants from the Affiliated Hospital of Chengdu University in China. The research instruments included a basic patient information form, the Resilience Scale Specific for Cancer (RS-SC-25), and the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Lung Cancer-43 (EORTC QLQ-LC-43). Data were analyzed using descriptive statistics and Spearman's rank-order correlation test.

The result of this study revealed that the mean score for resilience was 71.43 ± 18.11 . For HRQoL, the mean score of global health status was 60.70 ± 28.37 . The top three problems in terms of the general symptoms aspect were financial difficulty, fatigue, and insomnia. The top three problems regarding specific lung cancer symptoms were dyspnea, chest pain, and coughing. Resilience was positively significantly correlated with the positive aspects of HRQoL at a high level (global health status, role function, and emotional function) ($r_s = .78, .72, \text{ and } .71, p < .01$, respectively), and negatively significantly correlated with the negative aspects (fatigue, dyspnea, and appetite loss) ($r_s = -.72, -.64, \text{ and } -.60, p < .01$, respectively).

The results of this study are potentially useful for promoting resilience among persons with lung cancer who have completed chemotherapy in China, which might improve their HRQoL. In addition, an interventional research design may be considered in the future.

Keywords: Resilience; Health-related quality of life; Lung cancer; Completing chemotherapy

* Master's thesis, Master of Nursing Science Program (International Program), Faculty of Nursing, Chiang Mai University

** Corresponding author, Graduate student of Nursing Science Program (International Program), Faculty of Nursing, Chiang Mai University; email: hua_l@cmu.ac.th

*** Assistant Professor, Faculty of Nursing, Chiang Mai University

**** Associate Professor, Faculty of Nursing, Chiang Mai University

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บทคัดย่อ

การได้รับยาเคมีบำบัด เป็นการรักษาหลักสำหรับโรคมะเร็งปอด ซึ่งอาจมีผลต่อคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ นอกจากนี้ การได้รับยาเคมีบำบัดยังมีผลโดยตรงต่อความเข้มแข็งทางใจ วัตถุประสงค์ของการศึกษาค้นคว้านี้ เพื่อศึกษาความเข้มแข็งทางใจและคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ และความสัมพันธ์ระหว่างความเข้มแข็งทางใจและคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพในผู้ที่เป็นมะเร็งปอดที่ได้รับยาเคมีบำบัดครบ การคัดเลือกกลุ่มตัวอย่าง ใช้วิธีการสุ่มแบบเจาะจง เพื่อเลือกกลุ่มตัวอย่างจากโรงพยาบาลในสังกัดแห่งมหาวิทยาลัยเจียงตู สาธารณรัฐประชาชนจีน จำนวน 134 ราย เครื่องมือที่ใช้ในการวิจัยประกอบด้วย แบบฟอร์มข้อมูลส่วนบุคคล แบบสอบถามความเข้มแข็งทางใจสำหรับผู้ป่วยมะเร็ง และแบบสอบถามคุณภาพชีวิตในผู้ป่วยมะเร็ง วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และสถิติ Spearman's rank-order correlation test

ผลการศึกษาพบว่า ค่าเฉลี่ยของความเข้มแข็งทางใจเท่ากับ 71.43 ± 18.11 สำหรับค่าเฉลี่ยคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ หมวดสภาวะสุขภาพโดยรวมเท่ากับ 60.70 ± 28.37 ปัญหาของหมวดอาการทั่วไป 3 ลำดับแรก ได้แก่ ปัญหาทางการเงิน เหนื่อยล้า และนอนไม่หลับ ปัญหาอาการเฉพาะของมะเร็งปอด 3 ลำดับแรก ได้แก่ หายใจเหนื่อย เจ็บปวดในอก และไอ ความเข้มแข็งทางใจมีความสัมพันธ์ทางบวกระดับสูงกับมิติทางบวกของคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ อย่างมีนัยสำคัญทางสถิติ (สภาวะสุขภาพโดยรวม การทำหน้าที่ด้านบทบาท และการทำหน้าที่ด้านอารมณ์) ($r_s = .78, .72, .71, p < .01$ ตามลำดับ) และ มีความสัมพันธ์ทางลบกับมิติทางลบอย่างมีนัยสำคัญทางสถิติ (เหนื่อยล้า หายใจเหนื่อย และเบื่ออาหาร) ($r_s = -.72, -.64, -.60, p < .01$ ตามลำดับ)

ผลการศึกษา นี้ อาจจะเป็นประโยชน์ในการสนับสนุนความเข้มแข็งทางใจ ในผู้ที่เป็นมะเร็งปอดที่ได้รับยาเคมีบำบัดครบในประเทศจีน ซึ่งอาจจะเพิ่มคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพได้ และควรพิจารณาการออกแบบการวิจัยเชิงทดลองในอนาคต

คำสำคัญ: ความเข้มแข็งทางใจ คุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ มะเร็งปอด การได้รับยาเคมีบำบัดครบ

* วิทยานิพนธ์หลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

** ผู้เขียนหลัก นักศึกษาหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่
email: hua_l@cmu.ac.th

*** ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

**** รองศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

วันที่รับบทความ 28 สิงหาคม 2566 วันที่แก้ไขบทความ 21 พฤศจิกายน 2566 วันที่ตอบรับบทความ 23 พฤศจิกายน 2566



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Background and significance

Lung cancer, the most common cancer, is the leading cause of cancer deaths worldwide. Around 2.2 million new cases and around 1.8 million deaths from lung cancer were recorded in 2020 (Sung et al., 2021). Chemotherapy, as the main treatment for lung cancer, has many side effects (Polanski et al., 2016), some of which may persist for months after the end of chemotherapy, such as peripheral neuropathy (Staff et al., 2017). At the same time, chemotherapy drugs may also cause long-term damage to the lungs, kidneys, heart, and other organs, which will affect subsequent treatment (Zeien et al., 2022). These problems may result in prolonged and even increasing lengths of stay and are closely related to medical costs which can lead to increased financial burden, further affecting patients' emotions and social support (Lugg et al., 2016). Therefore, chemotherapy may affect lung cancer patients' subsequent treatment outcomes as well as their HRQoL, meaning that patients completing chemotherapy will experience varying levels of HRQoL.

HRQoL refers to subjective perceptions of the positive and negative aspects of a cancer patient's symptoms (Aronson et al., 1993). HRQoL among people with lung cancer is generally lower than that of other cancer patients due to the high morbidity and mortality, low cure rates, and significant treatment burdens (Polanski et al., 2016). Moreover, patients receiving chemotherapy for lung cancer have a lower HRQoL than patients receiving radiotherapy or surgery, and the HRQoL of lung cancer patients who have completed chemotherapy is also lower than before chemotherapy (Li et al., 2022). Nonetheless, HRQoL ratings in different domains may vary depending on disease, treatment, and patient characteristics including age, cancer type, and others (Polanski et al., 2016). While some factors cannot be changed or controlled by the patient, there are specific factors which are exceptions which include self-efficacy, social support, and resilience (Chen et al., 2018). Resilience can be employed not only as an independent factor affecting HRQoL, but also as a mediator of the effects of self-efficacy and social support on HRQoL (Lee & Jeong, 2019).

Resilience is the capacity to resist negative psychosocial and physical responses when encountering a traumatic event (Ye et al., 2018). Persons with lung cancer show a lower level of resilience than persons with nasopharyngeal or head and neck cancers (Wu et al., 2022; Xiang et al., 2022). Existing studies on resilience in lung cancer patients tend to focus on patients undergoing treatment. However, chemotherapy can cause not only physical problems, but also a series of psychological problems (anxiety and depression), which will directly affect the patient's resilience, resulting in a lower level of HRQoL. Therefore, this study is needed.

In the existing literature, a positive correlation between resilience and HRQoL in persons with lung cancer has been confirmed (Wang et al., 2017). However, more uncertain are the levels of resilience and HRQoL of persons with lung cancer completing chemotherapy, as well as whether the relationship between resilience and HRQoL still has a positive correlation and whether nurses can promote the HRQoL of lung cancer patients who have completed



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chemotherapy by improving resilience.

The results from this study will provide basic knowledge regarding resilience and HRQoL among persons with lung cancer completing chemotherapy. The information gained can be used as a basis for developing strategies or interventions to promote HRQoL through improving resilience among this group in the future.

Objectives

To describe resilience and HRQoL, and to examine the relationship between resilience and HRQoL among persons with lung cancer completing chemotherapy in China.

Conceptual framework

The concept of resilience defined by Ye et al. (2018) was applied as the conceptual framework for this study. Persons with lung cancer completing chemotherapy may encounter various physiological, psychological, and social support problems, along with side effects, and related symptoms, resulting in impaired HRQoL. In this study, resiliency is regarded as the capacity to improve HRQoL. Resilience manifests in five aspects: generic elements, benefit finding, support and coping, hope for the future, and meaning for existence, and might help persons with lung cancer who complete chemotherapy to effectively control their overall symptoms and maintain their functioning, which, in turn, will affect their HRQoL. If lung cancer patients completing chemotherapy show low resilience, overall HRQoL as well as its specific dimensions may be negatively affected.

Methodology

Population and sampling

The participants were persons diagnosed with primary lung cancer who had completed chemotherapy in hospitals and followed up in an outpatient department (OPD) which included thoracic, oncology, and respiratory units, in Chengdu, China. Inclusion criteria were as follows: 1) having completed all courses of chemotherapy for at least three months; 2) age above 18 years old; 3) ability to read and write Chinese language; and 4) having volunteered to participate in the study. Participants were excluded if they had a history of mental illness or other chronic disease (e.g., COPD, hypertension, heart failure, or stroke) in their medical record.

The sample size was calculated based on G * power analysis, $\alpha = .05$, and the power of the test of $1-\beta = .95$ was used in this study (Polit & Beck, 2004). According to the previous related research results from Wang et al. (2017), an effect size of .3 was adopted. Thus, the calculated sample size was 134.

Research instruments

The research instruments in this study included three parts:

1. The basic patient information form included the demographic and clinical information of the persons with lung cancer who had completed chemotherapy, i. e., age, gender, marital status,



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living arrangement, education level, employment, types of medical expenses, income status, type of lung cancer, lung cancer stage, time of completed chemotherapy, type of chemotherapy, other treatment, and number of comorbidities.

2. The Chinese version of the RS-SC-25 was developed by Ye et al. (2018) to assess resilience in cancer patients. It consists of 25 items within five dimensions: generic elements, benefit finding, support and coping, hope for the future, and meaning for existence. Using a Likert 5-level scoring method, a higher score reflected a higher level of resilience. The Cronbach's α was .97.

3. The Chinese version of the EORTC QLQ-LC-43 was made up of the QoL Questionnaire Core-30 (EORTC QLQ-C30) and the QoL Questionnaire Lung Cancer-13 (QLQ-LC13), developed by Aaronson et al. (1993) and Bergman et al. (1994), and translated into Chinese by Wan et al. (2008).

The EORTC QLQ C30 is a 30-item, cancer-specific HRQOL scale manifested in three aspects: functioning (physical, role, emotional, cognitive, and social), general symptoms (fatigue, nausea and vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulty), and global health status (Aaronson et al., 1993).

Lastly, the EORTC QLQ L13 is a 13-item scale measuring dyspnea and other symptoms resulting from lung cancer and its treatment (Bergman et al., 1994). Except for the global health status dimension (ranging from 1 “very poor” to 7 “excellent”), all other items in the scale are expressed on a scale of 1-4. Each functional domain or symptom scale/item is converted to a 0–100 scale based on the scoring guidelines. Higher scores represent either better HRQOL on functional scales and the global health scale, or worse symptoms on symptom scales/items (Aaronson et al., 1993; Bergman et al., 1994). The Cronbach's α ranged from 0.72 to 0.89.

Ethical considerations

The study was approved by the Research Ethics Review Committee of the Faculty of Nursing, Chiang Mai University, Thailand (Approval number: 060/2022, study code: 2022-EXP039). Hospital administrators gave permission to collect data at three units in the OPD at the Affiliated Hospital of Chengdu University, China. Participants were free to decline, stop, or withdraw at any time during the study.

Data collection

The researcher obtained the registration and booking information of persons who met the inclusion criteria from the hospital computer system in the OPD and then visited the patients to explain the research purpose and methods. Once participants agreed to participate, they were requested to sign the consent form. Then, their clinical information was recorded from the computer system by the researcher, and the RS-SC-25 and EORTC QLQ-LC-43 questionnaires and demographic data form were provided to participants to complete by themselves without any suggestions from the researcher. Completion of the questionnaire took 20-30 minutes and was done while the participants were waiting to see their physicians. The researcher was unable to



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suggest possible answers. All data collection was finished before patients saw their doctors.

Data analysis

Data were entered and analyzed using the SPSS 23.0 software. The demographic data and clinical information were analyzed using descriptive statistics including frequency, percentage, mean, and standard deviation. The score for the RS-SC-25 and EORTC QLQ-LC-43 were analyzed using mean, range, and standard deviation. The correlation between resilience and each sub-scale and single items of HRQoL were analyzed using Spearman's rank-order correlation test due to non-normal distribution of the data.

Results

A total of 134 participants consented to join the study with a mean age of 65.01 ± 8.47 . Over half of the participants were male (69.40%), married (82.83%), and retired (83.58%). All the participants had comorbidities (100%), while 38.06% had metastasis. More than half of the participants had completed chemotherapy within 12 months (57.46%). Most participants were diagnosed with NSCLC (89.55%). (Table 1).

The overall mean score for resilience was 71.43 ± 18.11 . In terms of dimensions, the mean score of generic elements, hope for the future, support and coping, benefit finding, and meaning for existence were 16.45 ± 5.26 , 15.09 ± 4.35 , 14.68 ± 3.95 , 12.67 ± 3.28 , and 12.54 ± 3.46 , respectively. (Table 2)

Regarding HRQoL, the mean score for global health status was 60.70 ± 28.37 . In terms of the functioning aspects, emotional function had the highest mean score (78.05 ± 19.96) while social function had the lowest mean score (51.74 ± 25.87). The top three problems in the general symptoms' aspect were financial difficulty (53.48 ± 33.71), fatigue (35.74 ± 30.54), and insomnia (29.60 ± 30.22). The major problems of specific lung cancer symptoms were dyspnea (28.94 ± 21.84), chest pain (18.16 ± 28.21), and coughing (16.42 ± 23.39). (Table 2)

Resilience was significantly positively correlated with the positive aspects of HRQoL at a high level (global health status, role function, and emotional function) ($r_s = .78, .72, \text{ and } .71, p < .01$, respectively). In contrast, resilience was significantly negatively correlated with the negative aspects (fatigue, dyspnea, and appetite loss) ($r_s = -.72, -.64, \text{ and } -.60, p < .01$, respectively). (Table 3)

Table 1 Frequency, Percentage, Mean \pm Standard Deviation (SD), and Range of Demographic and Clinical Information (n = 134)

Item description	Frequency n	Percentage %	Item description	Frequency n	Percentage %
Age (years) (Mean \pm SD = 65.01 ± 8.47 , Range = 47-92)			Completed time (months) (Mean \pm SD = 22.13 ± 29.10 , Range = 3-204)		
≤ 50	6	4.48	≤ 12	77	57.46
51-60	36	26.86	≥ 13	57	42.54
≥ 61	92	68.66			



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Table 1 Frequency, Percentage, Mean \pm Standard Deviation (SD), and Range of Demographic and Clinical Information (n = 134) (continue)

Item description	Frequency n	Percentage %	Item description	Frequency n	Percentage %
Gender			The type of lung cancer		
Male	93	69.40	SCLC*	14	10.45
Female	41	30.60	NSCLC**	120	89.55
Marital status			The stage of lung cancer***		
Married	111	82.83	Stage I	12	8.96
Unmarried	1	0.75	Stage II	45	33.58
Other	9	16.42	Stage III	36	26.87
Living arrangement			Stage IV	27	20.15
Alone	2	1.49	Metastasis		
With spouse	56	41.79	Yes	51	38.06
With children	24	17.91	No	83	61.94
With spouse and children	51	38.06	Employment status		
With others	1	0.75	Incumbency	14	10.45
Education level			Retirement	112	83.58
Primary school	33	24.63	Others	8	5.97
Middle school	50	37.31	Monthly household income		
High school	32	23.88	< 5,000 (CNY)/month	20	14.93
Associate's and above	19	14.18	5,000-10,000 (CNY)/month	48	35.82
Medical insurance			> 10,000 (CNY)/month	66	49.25
Yes	134	100%			
Any other comorbidity					
Yes	134	100			

Note. * Small-cell lung carcinoma

** Non-small-cell lung carcinoma

*** The information regarding SCLC is not recorded in the computer system.

Table 2 Mean \pm SD of Overall and Each Dimension of Resilience and Perceived HRQoL (n = 134)

Resilience score		Resilience score	
Item description	Mean \pm SD	Item description	Mean \pm SD
Overall	71.43 \pm 18.11	Support and coping	14.68 \pm 3.95
Generic elements	16.45 \pm 5.26	Benefit finding	12.67 \pm 3.28
Hope for the future	15.09 \pm 4.35	Meaning for existence	12.54 \pm 3.46



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Table 2 Mean \pm SD of Overall and Each Dimension of Resilience and Perceived HRQoL (n = 134)
(continue)

HRQoL score		HRQoL score	
Item description	Mean \pm SD	Item description	Mean \pm SD
Functioning		Global health status	60.70 \pm 28.37
Emotional function	78.05 \pm 19.96	Lung cancer symptoms	
Cognitive function	75.12 \pm 21.89	Dyspnea	28.94 \pm 21.84
Physical function	69.80 \pm 25.19	Pain in chest	18.16 \pm 28.21
Role function	62.56 \pm 32.28	Coughing	16.42 \pm 23.39
Social function	51.74 \pm 25.87	Pain in other parts of the body	15.17 \pm 24.39
General symptoms		Alopecia	7.21 \pm 16.53
Financial difficulty	53.48 \pm 33.71	Pain in the arm or shoulder	6.97 \pm 20.06
Fatigue	35.74 \pm 30.54	Dysphagia	2.99 \pm 9.55
Insomnia	29.60 \pm 30.22	Peripheral Neuropathy	2.24 \pm 9.32
Dyspnea	28.61 \pm 28.66	Sore mouth	1.74 \pm 8.49
Appetite loss	27.11 \pm 27.47	Hemoptysis	1.49 \pm 6.92
Pain	22.14 \pm 30.23	Pain relief after medication*	60.42 \pm 13.22
Nausea/vomiting	6.59 \pm 12.60		
Constipation	6.22 \pm 15.39		
Diarrhea	5.72 \pm 16.62		

Note. *This is an optional item.

Table 3 Correlation (Spearman's rank-order) between Perceived Resilience and HRQoL

HRQoL	Resilience	HRQoL	Resilience	HRQoL	Resilience
Functioning		General symptoms		Lung cancer symptoms	
Physical function	.65**	Fatigue	-.72**	Dyspnea	-.64**
Role function	.72**	Nausea/vomiting	-.22**	Coughing	-.64**
Emotional function	.71**	Pain	-.48**	Hemoptysis	-.18*
Cognitive function	.69**	Dyspnea	-.54**	Dysphagia	-.25**
Social function	.64**	Insomnia	-.54**	Alopecia	-.30**
Global health status	.78**	Appetite loss	-.60**	Pain in chest	-.33**
		Constipation	-.22*	Pain in the arm or shoulder	-.35**
		Diarrhea	-.26*	Pain in the other parts of the body	-.35**
		Financial difficulty	-.42**		

Note. *p < .05 **p < .01



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Discussion

Resilience

The overall score for resilience was 71.43 ± 18.11 in this study, which was lower than that for patients with nasopharyngeal and head and neck cancers (Wu et al., 2022; Xiang et al., 2022). Therefore, the resilience of persons with lung cancer who have completed chemotherapy requires more attention.

The lower capacity for resilience among persons completing chemotherapy may be related to age, working conditions, and current symptom burden. In this study, 83.58% of participants were retired, and 68.66% of patients were older than 60 years. Studies have shown that good working conditions will enable patients to find the value in life, and better fulfill their responsibilities and obligations, as well as make them more confident in the face of disease and treatment while demonstrating high adaptability; aging makes it difficult for them to have many plans for their lives or a strong sense of purpose in life (Hu et al., 2018).

Moreover, participants showed a good capacity in meaning for existence of resilience (12.54 ± 3.46) which may be related to the traditional Chinese view of life and death which advocates that all people are mortal. Meanwhile, the prognosis for lung cancer is closely related to the stage and classification of the disease. The disease's symptoms and its related complications not only aggravate a patient's anxiety and depression but also increase the related economic expenditures, which in turn, affects their resilience (Zhang et al., 2021). In this study, 57.47% of participants were at stage III or IV, or SCLC, while 100% had comorbidities and 38.06% had metastasis. However, this study demonstrated higher scores for resilience compared with the results of Chinese malignant tumor patients. Perhaps this is related to family support and education levels as well as the type of cancer (Ye, 2018).

Health-Related Quality of Life

The mean score for global health status was 60.70 ± 28.37 , which was higher than the results of Li et al. (2022), who reported that the pre-chemotherapy, during-chemotherapy, and post-chemotherapy global health status scores of lung cancer patients were 56.28 ± 17.32 , 55.09 ± 19.82 , and 51.50 ± 20.18 . Education level, family support, and insurance may contribute to higher levels of global health status. In this study, 75.37% of the participants had a middle school education or above; 97.76% of the participants lived with their spouse, children, or spouse and children; and 82.83% of them were in a marriage, while 100% of the participants had insurance.

In terms of the functioning aspect, the highest score was for emotional function (78.05 ± 19.96), higher than scores from a study by Li et al. about QoL in lung cancer patients related to emotional function (2022). In this study, 57.47% of participants were at stage III or IV, or had SCLC, but in Li et al.'s (2022) study, 99.09% of participants were at stage III or IV. The lowest score was for social function (51.74 ± 25.87) which was consistent with Li et al. (2022) and which may be due to unsatisfactory employment status. Retired participants in this study amounted to



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83.58%, which may lead to them think they are not useful in terms of their work or family.

Regarding the general symptoms' aspect, the top three problems were financial difficulty (53.48 ± 33.71), fatigue (35.74 ± 30.50), and insomnia (29.60 ± 30.22), which was consistent with a study by Huang and colleagues (2020) on HRQoL in persons with advanced lung cancer over 50 years old. In this study, all participants had medical insurance, and 49.25% of them had a family income of more than 10,000 (CNY)/month. However, China has not yet realized universal medical care, and patients need to pay different proportions of medical expenses according to different insurance types. Since lung cancer is a long-term disease requiring treatment, economic problems could seriously affect the quality of life of lung cancer patients.

The top three problems related to the lung cancer symptoms aspect were dyspnea, chest pain, and coughing which was slightly different from Huang et al. (2020) (dyspnea, coughing, and peripheral neuropathy) and may be due to the disease's progress and the duration of time for completion of chemotherapy. In this study, 57.47% of participants were at stage III or IV, or had SCLC, and 57.46% of participants had finished their chemotherapy within 12 months.

The relationship between resilience and HRQoL

The results of this study showed that resilience was positively correlated with the positive aspects (functioning and global health status) and negatively correlated with the negative aspects (general symptoms and lung cancer symptoms) of HRQoL in patients who had completed chemotherapy for lung cancer. This suggests that people who completed chemotherapy for lung cancer with the higher resilience scores are more likely to have better HRQoL. This result is consistent with the results of existing research findings (Wang et al., 2017).

A high capacity for resilience demonstrates high receptivity, strong social attitudes, humor and optimism, and strong personal decision-making skills. These traits help people to cope better with lung cancer and the changes it brings, helping them recover more quickly from the disease and its effects (Ye et al., 2018). Also, they will gradually shift their attention from other things to their family, and better understand their families. In addition, persons with lung cancer who have high resilience can effectively cope with lung cancer through physical activity, a healthy diet, hobbies, and other ways to promote physical health (Ye et al., 2018). They can also effectively manage symptoms of lung cancer and side effects based on their doctors' suggestions.

In addition, they can obtain better social support by promoting peer relationships, family cohesion, and medical staff relationships. Moreover, persons with lung cancer and high resilience will adjust their life plan according to the changes in their disease, actively participate in lung cancer treatment, have goals and hopes for the future, and demonstrate a love for life. Moreover, they are more at peace with the inevitability of death. Simultaneously, individuals can do their best to fulfill the obligations they have and recognize self-value in their remaining time (Ye et al., 2018). Consequently, individuals with higher scores of resilience tend to exhibit higher levels of HRQoL.



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Conclusions and implications

This study is currently the foremost study in China to explore the relationships between resilience and HRQoL among persons with lung cancer who have completed chemotherapy. According to the findings, hospitals and nursing practice may have evidence to improve the HRQoL and resilience of lung cancer patients. Healthcare professionals should strengthen the continuity of care for lung cancer patients who have finished chemotherapy and promote the improvement of patients' mental resilience and health-related quality of life after chemotherapy. Nursing educators and managers can strengthen the continuing nursing training and education for nursing students and nurses for lung cancer patients after chemotherapy.

Recommendations

An interventional research design may be considered, to implement a program that can promote the resilience and HRQoL of persons with lung cancer.

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