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Review

Research Progress on Benefit Finding of Patients with Lung Cancer

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Abstract

Patients with lung cancer are under great psychological pressure in the process of treatment, but at the same time, they also get related positive benefits from the disease. This paper reviews the concept, assessment tool, present situation, influencing factors and intervention measures of benefit finding of patients with lung cancer, aiming to provide basis for psychological nursing of patients with lung cancer in China.

Key words: Lung Cancer; Patients; Benefit Finding; Nursing; Review.

Introduction

Lung cancer is one of the malignant tumors with the highest morbidity and mortality in the world (1), and the highest morbidity and mortality in China (2). According to statistics, the per capita medical cost of patients with lung cancer in China is increasing (3), and lung cancer is becoming an important health and social problem in China (4). Lung cancer not only causes physical pain of patients, including fatigue, loss of appetite, dyspnea, pain, hemoptysis, etc., but also increases the psychological pressure of patients, including fear, tension, anxiety, depression, sadness, etc. (5). Domestic and foreign scholars pay more attention to the negative experiences of patients with lung cancer such as anxiety and depression. With the development of positive psychology, researchers have found that negative life events can also bring some positive effects on patients, such as benefit finding(BF) (6). At present, there are many research on benefit finding abroad, but domestic research is still in its infancy. This paper reviews the current research status of benefit finding in patients with lung cancer, to provide reference for the research of benefit finding in China.

1 The Concept of Benefit Finding

Different scholars have given different

definitions and explanations from different research perspectives. Taylor (7) defined benefit finding as a cognitive and behavioral response process in which individuals discover personal, social, psychological and spiritual benefits from negative life events such as trauma or disease, including personal growth, spiritual growth, acceptance and treasure, improvement of family and social relations, and healthier lifestyle. Helgeson et al. (8) defined it as a positive result caused by a stressful or traumatic event. Chinese scholar Liu Zhunzhun et al. (6) put forward the concept of cancer patients' benefit finding under the medical background, also known as benefit discovery (9) and discovery significance (10).

2 Evaluation Tool for Benefit Finding of Patients with Lung Cancer

The benefit finding scale (BFS) is used to evaluate the benefit finding of patients with lung cancer. The BFS is a 17 item one-dimensional scale developed by Antoni et al. (11). The higher the score is, the higher the level of benefit finding is. The consistency of the scale is 0.95. On this basis, Weaver et al. (12) added lifestyle dimensions such as diet and physical exercise to form a 22 item multidimensional scale, and the internal consistency coefficient of reliability and validity was 0.91~0.96. Liu Zhunzhun et al. (13) introduced the BFS into China and formed a Chinese version of the BFS through cross-cultural adjustment, including 6 dimensions. The Likert 5-grade scoring method was used, with a total score of 22~110 points. The higher the score, the more benefits. Cronbach's α coefficient was 0.95, and the average content validity index of the scale was 0.97. The scale has good reliability and is an effective tool to evaluate the benefit finding of patients with lung cancer.

3 The Present Situation of Benefit Finding in Patients with Lung Cancer

Benefit finding helps patients and caregivers to adapt to the disease and enables them to be optimistic about life. The main benefits include personal growth (becoming stronger and more confident), life change (being grateful for life and having more goals in life), getting along with others (recognizing true friends), better coping and healthier habits (14,15). Research (16) found that patients with non-small cell lung cancer (NSCLC) had a low level of benefit finding, with a score of (47.63±13.65), significantly lower than (52.13±19.06) of Cavell et al. (17) on 92 patients with different types of cancer in New Zealand. It was also lower than (78.53±10.50) of Liu Zhunzhun et al. (18) for Chinese patients with different types of cancer. It may be caused by different scales of benefit finding, or by differences in cultural background and beliefs, or by different diseases, resulting in deviations in results. It is also possible that the disease is not a single, so that the results are biased. When discussing the relationship between spiritual health and positive psychological quality of patients with advanced lung cancer, Li Xiaohui et al. (19) found that the score of benefit finding of patients with lung cancer was (43.35± 11.01), and the score was also low. However, Mei Yaqi et al. (20) found that the total score of breast cancer patients' benefit finding was (47.9±13.4), which was in the middle level, slightly higher than that of lung cancer patients. The research of Llewellyn et al. (21) on patients with head and neck cancer showed that the score of benefit finding was (59.79±7.59), which was in the middle and high level. This suggests that we should pay more attention to the psychological status of patients with lung cancer, and help them to better perceive the benefit finding, to promote their better recovery of health.

4 Influencing Factors of Benefit Finding in Patients with Lung Cancer

4.1 Individual Factors

4.1.1 Social Demographic Factors

Several studies (8,16,22,23) showed that there was a statistical difference between age, gender, economic status, educational level and benefit finding score of patients with lung cancer. 1) Age: A meta-analysis by Helgeson et al. (8) showed that the younger the age, the higher the level of benefit finding, and the results of Tao Li (22) were consistent with this; while Wang Qian (16) found that there is not a simple linear relationship between age and benefit finding score in patients with NSCLC. Among them, patients aged 50~60 had the highest score of benefit finding, while patients under 50 years old and over 60 years old scored lower (16), which may be caused by the difference of research sample selection. The studies (8,22) included lung cancer, cervical cancer, ovarian cancer, esophageal cancer, breast cancer and other malignant tumors, while the research (16) only studied NSCLC. 2) Gender: The studies (10,23) showed that the level of benefit finding of female patients was higher than that of male patients, while the results of Wang Qian (16) showed that gender had no statistical significance on the score of benefit finding of patients with lung cancer. 3) Economic status: The results of the studies (16,22) showed that the economic level of patients with lung cancer was positively correlated with the score of benefit finding, that was, the higher the economic level, the higher the level of benefit finding. This may be because the higher the economic level, the smaller the burden of patients, the more energy to invest in the positive changes found in the process of lung cancer; while patients with low economic level will pay too much attention to whether individuals and their families can afford huge medical expenses. Because of the heavy economic burden of lung cancer patients, it is necessary to standardize the rational use of drugs in medical institutions, increase the reimbursement ratio of drugs related to lung cancer, and improve various social security systems to effectively reduce the economic burden of lung cancer patients. In addition, medical staff can help them seek financial help from the outside, such as crowdfunding to share their financial pressure to improve the level of benefit finding. 4) Education level: The results of Tao Li (22) showed that the higher the education level, the higher the score of benefit finding of patients, but the results of Wang Qian (16) showed that there is no significant difference between education level and benefit finding of lung cancer patients, and the difference still needs to be verified by subsequent research.

4.1.2 Psychological Factors

4.1.2.1 Optimism

In 1985, Scheier et al. (24) put forward that optimistic tendency refers to a kind of positive expectation for the outcome of future events, which belongs to the category of positive psychology together with benefit finding. Optimism can significantly predict the level of patients' benefit finding. Li Xiaohui et al. (19) showed that the more optimistic the patient was, the higher the score of benefit finding would be. When studying the relationship between optimism and benefit finding, Liu Zhunzhun et al. (18) concluded that there was a low correlation between them. McCrae (25) believed that individuals with extroverted and open personality were more likely to gain strength from difficulties to deal with threats, which was similar to the results of Liu Zhunzhun et al. (18). Nurses should be good at analyzing the personality characteristics of patients, especially pay attention to the introverted and intermediate type patients, promote the communication between doctors, nurses and patients, and help patients with psychological adjustment.

4.1.2.2 Coping Style

Lung cancer is a stressor. Method oriented coping strategies can mobilize personal and social resources, to promote the positive response to stressors and promote benefit discovery. Specific coping strategies are positively correlated with benefit finding, including problem-solving coping, religious coping, active reconstruction, receptive

coping, seeking help, emotional coping, and positive coping (26,27). Positive reinterpretation and acceptance are the best predictors of stressor related to growth. Coping can help patients correctly face the disease and positively predict benefit finding (28). In the nursing work, patients should be encouraged to adopt positive adaptive coping strategies, improving their emotions and enhancing their benefit finding.

4.1.2.3 Gratitude Attitude

The survey results of Wang Qian (16) showed that gratitude was positively correlated with benefit finding of patients with NSCLC. The more obvious the gratitude of patients is, the higher the level of benefit finding is. Gratitude is conducive to promoting individual physical, psychological and social health, mobilizing the positive emotions of patients, coping with the disease with a more optimistic attitude, triggering thinking, to promote patients' better recovery of health (29). It is suggested that nursing staff can pay attention to patients' gratitude, encourage patients to keep gratitude diary and write gratitude letters, to better help patients maintain gratitude, and make patients more aware of the benefit finding.

4.2 Disease Related Factors

4.2.1 Disease Staging

The correlation between disease staging and benefit finding is still controversial. Studies (16,17) showed that the later the disease staging, the lower the benefit finding level of patients with lung cancer. However, Lechner et al. (30) through the investigation of 83 cancer patients found that patients in stage II had the highest benefit finding, while patients with stage I and IV had a lower benefit finding. This may be due to the fact that patients in stage II gradually adapt to the reality of cancer and actively respond to it and can find positive changes brought about by cancer; patients in stage I may not be able to accept cancer, patients in Stage IV may be in worse physical condition, and worry and fear are dominant, leading to low score of benefit finding. Therefore, the correlation should be further verified in the follow up studies, to provide the basis for psychological guidance of cancer patients at different stages.

4.2.2 Disease Metastasis

When metastases appeared, the level of benefit finding of patients with lung cancer reduced (16), which was consistent with the research of Cavell et al. (17). The investigation of Hu Ye (31) in China also showed that cancer metastasis would reduce the level of benefit finding of patients. This may be due to the deterioration of the disease, patients with lung cancer feel life-threatening, increased fear and anxiety. Not only do they suffer physically from the disease, but they may also experience increased financial stress and psychological overload due to the need for more treatment, leading to poor treatment compliance with negative emotional and preventing them from achieving positive psychological changes.

4.2.3 Diagnosis Time

The study found that the longer the diagnosis time, the higher the level of benefit finding. A longitudinal study of 118 patients with lung cancer (32) showed that the level of benefit finding of patients with small cell lung cancer increased with time. Tao Li's (22) survey showed that the diagnosis time within 3 years was positively correlated with the score of benefit finding, but the score of benefit finding decreased 3 years later. This may be because the longer the diagnosis time was, the patients had gradually accepted the reality and obtained positive growth and change, and the level of benefit finding gradually increased; but three years later, the score of benefit finding decreased, which may be caused by the fact that patients still could not prevent cancer metastasis after treatment, and the patients with lung cancer were afraid of worsening of the disease, etc. It is also possible that the patients' benefit finding, and diagnosis time are not simple linear relationship, but go through

different processes with the progress of time, which needs to be confirmed by research.

4.3 Social Environmental

Social support can reduce psychological stress reaction, relieve mental tension and improve social adaptability (33). Foreign studies (34,35) have shown that there is a positive correlation between social support and benefit finding. Schwarzer et al. (35) also pointed out that the timing of social support is of great significance to cancer patients. Providing social support before surgery will have a higher level of benefit finding than providing support at the stage of postoperative treatment. Domestic studies (16,22) also showed that social support can promote benefit finding of patients with lung cancer. The reason may be that patients perceive the care and support from relatives and friends, realize that "A friend in need is a friend indeed", and through communication with medical staff, they can better look at their own diseases and look at problems from an optimistic perspective, so benefit finding will be improved.

In addition, the level of medical technology in the hospital where the patients with lung cancer are located may affect the patient's inner stability (36) and affect the level of benefit finding. According to the actual economic situation of lung cancer patients, the hospital can be arranged, and the economically acceptable patients can be referred to the better hospital for treatment.

5 Intervention Measures to Improve the Benefit Finding of Patients with Lung Cancer

5.1 Yoga

Yoga has a certain debugging effect on the psychology of patients with lung cancer. Kathrin et al. (37) carried out a double yoga program for patients with lung cancer receiving radiotherapy and their caregivers to buffer the side effects of chemotherapy. The program consisted of 4 main components: joint loosening with breath synchronization, postures (asanas) and a deep relaxation technique, breath energization (pranayama) with sound resonance, meditation, 2~3 times a week, 60 minutes each time, totally for 6 weeks. The results showed that the anxiety level of the patients was significantly reduced, the mental health was significantly enhanced, the benefit finding had a moderate effect, and the sleep disorders of caregivers were significantly reduced. However, the sample size of this study is small and there is no control group. Therefore, we cannot exclude the possibility that the benefit finding of patients can be improved by time instead of practicing yoga. We need randomized controlled studies to determine the effect in the future.

5.2 Five Elements Music of Traditional Chinese Medicine Combined with Muscle Relaxation Exercise

Five elements music of traditional Chinese medicine is one of the five sets of therapeutic music selected by doctors according to the location of the patient's disease: Jiao (liver), Zhi (heart), Gong (spleen), Shang (lung) and Yu (kidney). Through the sound wave oscillation of different tone music, the qi and blood in the organism can be coordinated, and the balance state in the body can be restored, to optimize the psychological state of patients (38). Liao Juan et al. (39) conducted a randomized controlled study on the relationship between depression and benefit finding in patients with advanced cancer, the control group adopted progressive muscle relaxation exercise, the intervention group was given Chinese medicine five element music combined with muscle relaxation exercise, 5 times a week, 30 minutes per time, including muscle relaxation exercise for 20 minutes, listening to music for 10 minutes, a total of 8 weeks. The results showed that the score of benefit finding and depression reduction rate in the intervention group was significantly higher than that in the control group, and the difference was statistically significant. Traditional Chinese medicine characteristic technology can improve the level of benefit finding of patients with advanced cancer,

improve their anxiety and depression, improve their physique, adjust their internal balance, improve their disease resistance, enhance their tolerance to side effects of treatment, reduce their symptom burden and improve their quality of life. Nurses can play five elements music of traditional Chinese medicine to patients with lung cancer and cooperate with muscle gradual relaxation training to improve the level of benefit finding.

5.3 Wisdom Intervention Training Combined with Health Education

Wisdom refers to the individual's ability to deal with daily affairs independently or the ability to get help from the outside when the individual cannot cope with daily affairs, including personal wisdom and social wisdom (40). Zhu Li et al. (41) discussed the influence of wisdom intervention training combined with health education on benefit finding of lung cancer patients undergoing radiotherapy. 90 cases of lung cancer patients treated with radiotherapy were randomly divided into control group and intervention group. The control group was given routine health education, while the intervention group was given intelligent intervention training based on this. The responsible nurses carried out the training, and the intervention lasted 4 times, 15~30min each time. Intelligent intervention training includes guiding patients to manage and control emotions, adjusting cognition, enhancing self-awareness, applying help-seeking strategies, rationally and effectively utilizing their internal and external resources, and actively seeking professional help. The results showed that the scores of benefit finding in the intervention group were higher than those in the control group, and the difference was statistically significant. Wisdom intervention training combined with health education can effectively improve the level of benefit finding of patients with lung cancer undergoing radiotherapy, which has better application value.

6 Conclusions and Prospects

To sum up, there are many studies on benefit finding in foreign countries, most of them focus on breast cancer and other cancer patients, but few studies on lung cancer patients' benefit finding, and there are still some problems: 1) Compared with breast cancer and other cancers, lung cancer patients have a low level of benefit finding, which needs to be improved. 2) The single research on the benefit finding of patients with lung cancer is few, which needs larger sample size research. 3) There are many influencing factors of lung cancer patients' benefit finding, including controllable factors and uncontrollable factors. In terms of social support and psychological factors, the more social support and psychological optimism patients get, the higher the level of benefit finding, which is roughly the same as breast cancer (42). 4) There are many intervention studies for breast cancer patients, such as cognitive behavioral intervention, complementary and alternative medicine, etc., which can effectively improve the depression of patients and improve the benefit finding level of breast cancer patients (42). However, there is no systematic and targeted intervention plan for lung cancer patients. In addition, because the symptom burden of lung cancer patients is more serious than other cancers such as breast cancer, the symptoms of lung cancer patients should be fully evaluated during the treatment. According to different symptoms, targeted measures should be taken, such as giving reasonable dietary guidance to the patient's "anorexia", discussing with family members ways to increase the patient's appetite, improving the patient's nutritional status and enhancing their resistance, thus gradually improving the patient's satisfaction with quality of life and further improving their prognosis. 5) At present, most of the research on the benefit finding are cross-sectional studies, which cannot grasp the change degree of benefit finding level of patients with lung cancer over time. A study showed that patients with head and neck cancer showed a moderate and high level of benefit finding before

treatment with the score of (59.79±7.59) and after treatment for 6 months with the score of (58.13±8.22), which did not change significantly with time (21). Wang et al. (43) measured the benefit finding of breast cancer patients within one week with the score of (44.95±7.60) and four weeks after diagnosis with the score of (40.84±6.03), and its level decreased.

Therefore, based on learning from foreign research, it is necessary to conduct comprehensive research on benefit finding of lung cancer patients under the cultural background of China and establish targeted intervention programs to improve the quality of life of Chinese cancer patients. The follow-up research can explore from the following aspects: 1) Compared with other cancers, such as breast cancer and head and neck cancer, lung cancer patients have a lower level of benefit finding, nurses should receive regular training, master psychological nursing skills, so that patients with lung cancer have positive emotional experience, to improve the level of benefit finding. 2) In the future, we can carry out research on the benefit finding of lung cancer, expand the sample size, explore the level of benefit finding and its influencing factors, and study effective intervention methods for controllable factors. Cognitive behavioral therapy, which is widely used in breast cancer patients, can improve the mood of patients, stimulate their emotional expression, and reduce patients' physical symptoms. This method can be used in lung cancer patients in the future to induce their positive emotions and rebuild their positive cognition, thus improving their physical and mental state and effectively improving the quality of life of lung cancer patients. 3) Longitudinal research can be carried out to explore and analyze the dynamic change trend of benefit finding level. 4) At present, qualitative studies have been conducted on the experience of benefit finding in patients with breast cancer during convalescence and chemotherapy but lack the real experience of lung cancer patients' benefit finding. In the future, we can carry out qualitative research, and combine quantitative research with qualitative research to formulate practical and effective psychological intervention measures, to improve the level of benefit finding of patients with lung cancer and improve their quality of life.

Declarations

1) ***Consent to publication***
   We declare that all authors agreed to publish the manuscript at this journal based on the signed Copyright Transfer Agreement and followed publication ethics.
2) ***Ethical approval and consent to participants***
   Not applicable.
3) ***Disclosure of conflict of interests***
   We declare that no conflict of interest exists.
4) ***Funding***
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5) ***Availability of data and material***
   We declare that the data supporting the results reported in the article are available in the published article.
6) ***Authors' Contributions***
   Authors contributed to this paper with the design (YGZ), literature search (YGZ), drafting (YGZ), revision (YGZ and ZMG), editing (YGZ and ZMG) and final approval (YGZ).
7) ***Acknowledgement***
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8) ***Authors' biography***
   None

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