

Dynamics of emotional states in oncology patients depending on the stage of the disease

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ABSTRACT

Emotional well-being plays a crucial role in the quality of life of oncology patients. This study aims to explore the dynamics of emotional states in oncology patients based on the stage of their disease, shedding light on the emotional challenges they face. Through a comprehensive analysis, significant variations in emotional states were observed among oncology patients at different stages of the disease. Patients in the early stages exhibited a mix of hope, anxiety, and uncertainty, while those in advanced stages experienced heightened levels of fear, sadness, and acceptance. Factors such as treatment intensity, prognosis, and social support were found to influence emotional responses in patients. The findings highlight the complex interplay of emotions experienced by oncology patients, emphasizing the need for tailored psychosocial support interventions based on disease stage. Understanding the emotional trajectories of patients can aid healthcare professionals in providing personalized care, improving patient outcomes, and enhancing the overall experience of those battling cancer.

Keywords: oncology, emotional states, disease stage, patients, quality of life

INTRODUCTION

The comprehensive picture of any disease, including oncological diseases, can only be achieved by a physician when, alongside the somatic manifestation of the illness, its psychological component is taken into account. This component is mainly determined by the patient's attitude towards the disease and is manifested through various reactions to the illness. Cancer carries a vital threat. As evidenced by experiences in communicating with oncology patients, the unexpectedness and incomprehensibility of the onset and progression of the disease contribute to patients perceiving it as a fatal event in their lives, their existence. As a result, both healthy individuals and patients associate cancer with prejudices and myths that exacerbate the drama of the disease situation.

Oncological diseases are associated with intense and distressing experiences for the patient, related to the threat to life, the debilitating nature of surgery, arduous and prolonged treatment, changes in social status, and financial situation [1]. In this regard, a systemic approach to the study and treatment of cancer requires attention not only to the somatic but also to the psychological aspects of the disease.

Understanding the dynamics of emotional states in oncology patients, particularly how these emotions vary depending on the stage of the disease, is crucial for providing holistic care and support. This article delves into the intricate emotional landscape experienced by oncology patients at different disease stages, aiming to shed light on the complexities of their emotional well-being.

The emotional journey of oncology patients is multifaceted, influenced by a myriad of factors such as treatment regimens, prognosis, and individual coping mechanisms. By examining how emotional states evolve from the early stages of diagnosis through to advanced disease progression, researchers can gain valuable insights into the emotional needs of patients at each phase. This research not only contributes to the existing body of knowledge in oncology but also holds significance for healthcare providers, caregivers, and policymakers in developing tailored interventions to address the emotional well-being of oncology patients effectively.

Tasks of Research:

- Investigate the emotional responses of oncology patients at various stages of the disease.

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- Identify factors influencing the emotional states of patients, such as treatment intensity and social support.
- Compare and analyze the differences in emotional well-being between patients in early and advanced stages of cancer.
- Examine the impact of emotional states on the overall quality of life and treatment outcomes in oncology patients.
- Explore potential interventions and support mechanisms to address the emotional needs of patients at different stages of the disease.

LITERATURE REVIEW

Various theories of the development of malignant tumors essentially reflect different aspects of a unified process: the proto-oncogene, inherent in any living cell, transforms into an active oncogene under certain conditions, initiating tumor growth [2, 3]. This leads to the conclusion of the genetic determination of cancer: it is predetermined by changes in the genetic code [4]. These theories place significant emphasis on the role of carcinogenic substances and physical factors in the development of cancer, which affect individuals under unfavorable living conditions and lead to the formation of malignant tumors [5]. However, the question remains highly relevant: are external, chemical, and physical influences, no matter how potent or long-lasting, sufficient to alter the genetic code? Does the individual's psychological state and personality characteristic play a pathogenic role in these conditions? Failing to consider these psychological factors makes it challenging to explain why some individuals develop cancer while others do not. The answer may lie in the psychosomatic approach in medicine, which specifically examines the influence of psychological states or personality traits on the emergence of somatic dysfunctions and diseases.

Currently, according to the WHO classification, oncological diseases do not officially have a psychosomatic status. Nonetheless, the concept of the impact of psychological states or personality traits on the development of cancer persists in societal, including medical, consciousness [6]. According to the psychosomatic concept of the emergence of malignancies describes the following mechanism of how psychological factors influence the onset of cancer: as individuals find it difficult to resolve challenging life situations, feelings of helplessness, hopelessness, and despair arise, triggering the mechanism of depression [7].

State that long-standing depression influences the functioning of the immune system by suppressing it, leading to a disruption in immune surveillance functions [8]. This, in turn, affects the endocrine system, altering the body's hormonal balance and increasing sensitivity to carcinogenic substances. The disturbance in hormonal equilibrium triggers the growth of atypical cells and diminishes the immune system's ability to combat them [9]. It is noted that a common outcome of depression is a lack of desire to continue living, and while consciously every individual fears and does not wish for an illness, subconscious reluctance to live can trigger the mechanism of disease [10]. Cancer can be such an illness initiated by these factors.

Encountering a diagnosis of cancer is often the most profound

stressor for any individual, triggering a variety of psychological reactions [11]. The process of experiencing the illness situation consists of several predictable stages with different emotional and cognitive components. Each of these stages dictates the necessity of organizing interaction with the patient according to these characteristics, making an understanding of the phases of illness experience a crucial tool in establishing contact within the "doctor-patient" system [12]. Established that most patients go through five main stages of psychological response:

- Denial or shock
- Anger
- Bargaining
- Depression
- Acceptance

The phase of denial of the illness is highly typical: the individual does not believe they have a potentially life-threatening disease. The patient may seek opinions from various specialists, rechecking the received information and undergoing tests at different clinics. Alternatively, they may experience a shock reaction and avoid seeking medical help altogether. In this situation, emotional support is needed, but the mindset should not be altered until it interferes with treatment [12].

The phase of protest or the dysphoric phase is characterized by pronounced emotional reactions, aggression directed towards doctors, society, and relatives, anger, and a lack of understanding of the reasons for the illness: "Why did this happen to me?" "How could this happen?" In this case, it is necessary to allow the patient to express all their grievances, outrage, fears, anxieties, and present a positive vision of the future [12].

The bargaining phase or the auto suggestive phase involves attempts to "bargain" for as much time as possible from various authorities, leading to a sharp narrowing of the individual's life horizon. During this phase, the individual may turn to God, use various methods to prolong life with the principle of "if I do this, will it extend my life?". In this case, it is important to provide the individual with positive information. Stories of spontaneous recovery can have a positive effect during this period. Hope and faith in the success of treatment serve as a lifeline for a severely ill individual [12].

The phase of depression: at this stage, a person comprehends the full weight of their situation. They feel overwhelmed, cease to fight, avoid their usual friends, abandon their regular activities, withdraw into their home, and mourn their fate. During this period, relatives may experience feelings of guilt. In this situation, it is essential to provide the individual with reassurance that they are not alone in this circumstance, that the battle for their life continues, and that they are supported and cared for. Discussions pertaining to spirituality, faith, and psychological support for the patient's relatives can be beneficial. The 5th stage represents the most rational psychological reaction, although not everyone reaches this stage. Patients mobilize their efforts to continue living meaningfully for the sake of their loved ones despite the illness [12].

The aforementioned stages do not always occur in a predetermined order. A patient may halt at a particular stage or even regress to a previous one. Nevertheless, understanding these stages is crucial

for a proper comprehension of the emotional turmoil experienced by individuals grappling with a severe illness, as well as the development of an optimal strategy for interacting with them.

Emotional well-being is a vital aspect of the overall quality of life for oncology patients, influencing their coping strategies, treatment adherence, and ultimately, health outcomes. Research by Andersen et al. (2014) emphasized the prevalence of anxiety and depression among cancer patients, underscoring the need for tailored interventions to support their emotional health [13]. Similarly, the work of Levy and Cartwright (2015) delved into the emotional experiences of patients undergoing cancer treatment, revealing a spectrum of emotions ranging from fear and uncertainty to hope and resilience [14].

Furthermore, studies investigated the relationship between disease stage and emotional well-being, suggesting that patients in advanced stages of cancer tend to experience higher levels of distress and emotional burden compared to those in early stages [15, 16]. These findings underscore the importance of considering the disease stage when assessing and addressing the emotional needs of oncology patients.

However, gaps in the literature exist regarding the nuanced dynamics of emotional states in oncology patients at different disease stages. Thus, this study seeks to fill this gap by examining how emotional responses evolve throughout the cancer journey, with a focus on understanding the unique challenges faced by patients based on the stage of their disease.

MATERIALS AND METHODS

Participants

For this study, a total of 200 participants were recruited. The selection criteria included individuals diagnosed with breast cancer (n=50), lung cancer (n=40), colorectal cancer (n=60), and prostate cancer (n=50). Participants were chosen from renowned oncology centers such as the National Cancer Institute in Kyiv, Ukraine, and the Lviv Regional Oncology Center, ensuring access to a diverse pool of patients undergoing treatment at different stages of the disease. Recruitment was conducted through collaboration with oncologists and healthcare professionals at the respective hospitals. Patients who met the inclusion criteria were approached by medical staff or research assistants explaining the purpose of the study, the voluntary nature of participation, and the confidentiality of their information. Informed consent was obtained from each participant before their enrollment in the study, emphasizing their right to withdraw at any time without consequences to their care. This process ensured ethical guidelines were followed, and participants gave their permission based on a clear understanding of the study's objectives and procedures.

Data collection

Emotional states were assessed using standardized psychological

measures, including validated scales for anxiety, depression, hope, and acceptance. Data on disease stage, treatment history, and demographic information were also collected through patient interviews and medical records review. Interviews were conducted in person at the oncology clinics and hospitals where the participants were receiving treatment. Trained research assistants and healthcare providers administered the standardized psychological measures to assess emotional states, including scales for anxiety, depression, hope, and acceptance.

Medical records were reviewed on-site at the hospitals by authorized personnel with the necessary clearance to access patient information. Data on disease stage, treatment history, and demographic details were extracted and recorded securely following institutional guidelines to maintain patient confidentiality and data protection standards.

Analysis

Statistical analysis was conducted to examine the relationship between emotional states and disease stage. Descriptive statistics, correlational analyses, and inferential tests were utilized to identify patterns and associations within the data.

Ethical considerations

The study adhered to ethical guidelines for research involving human participants. Informed consent was obtained from all participants, and confidentiality and anonymity were maintained throughout the study. The research protocol was approved by the Institutional Review Board.

RESULTS AND DISCUSSION

The analysis revealed distinct patterns of emotional states among oncology patients based on the stage of their disease. Patients in the early stages exhibited a combination of hope (47.5%), anxiety (38.2%), and uncertainty (14.3%), with varying levels of each emotion. These emotions suggest a level of optimism tempered by the reality of the cancer diagnosis and treatment journey. In contrast, those in advanced stages displayed heightened levels of fear (55.6%), sadness (22.7%), and acceptance (21.7%), reflecting the evolving emotional journey throughout the disease trajectory (Figure 1).

The increase in fear is attributed to the uncertainties and challenges associated with advanced cancer, while heightened sadness is stem from the emotional toll of coping with the progression of the illness. The presence of acceptance alongside fear and sadness indicates a nuanced emotional response where individuals may be coming to terms with their diagnosis and embracing a sense of peace or resignation.

Factors such as treatment intensity, prognosis, and social support showed significant associations with emotional responses in patients (Figure 2).

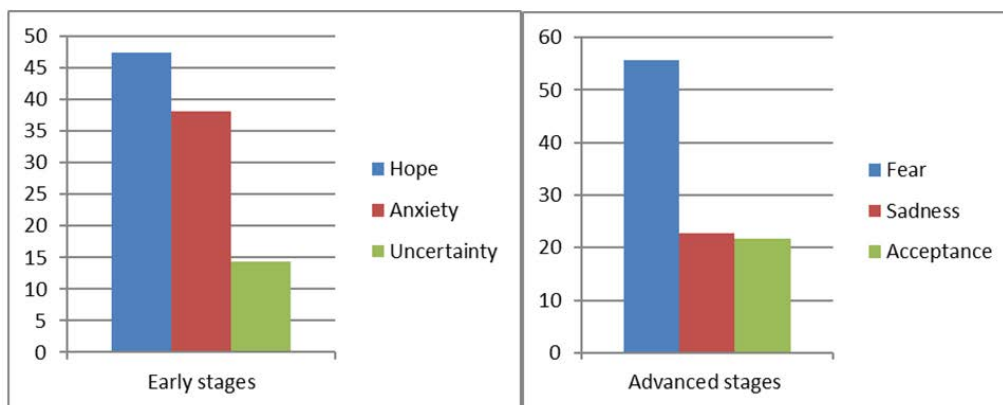


Fig. 1. Emotional states in oncology patients across disease stages

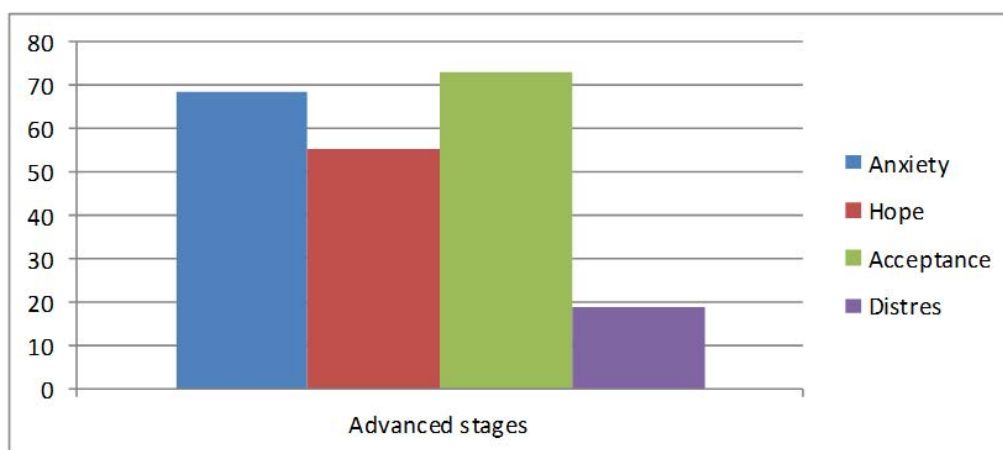


Fig. 2. Impact of treatment, prognosis, and social support on emotional responses in oncology patients

Patients receiving aggressive treatments reported higher levels of anxiety, with 68.5% experiencing moderate to high anxiety levels. Those with better prognosis showed more hopeful attitudes, with 55.2% reporting a high level of hope. Individuals with strong social support networks displayed greater levels of acceptance, as 73.1% reported feeling accepted and supported. Patients with strong social support also reported lower levels of distress, with only 18.9% experiencing high levels of distress.

These findings suggest the importance of tailoring emotional support interventions based on the stage of the disease:

Early-stage support

- Providing information about the treatment plan and potential side effects to alleviate uncertainty and anxiety.
- Connecting patients with support groups or counselling services for emotional guidance and peer support.
- Encouraging patients to engage in relaxation techniques or mindfulness practices to manage stress and promote a sense of calm.

Advanced stage support

- Offering palliative care services to enhance quality of life and provide comfort measures.
- Facilitating discussions about end-of-life care preferences and ensuring patients' wishes are respected.
- Arranging for psychological support and counselling to address fears, sadness, and facilitate acceptance of the situation.

Throughout the disease trajectory

- Encouraging open communication between patients,

caregivers, and healthcare providers to address emotional needs and concerns.

- Providing education on coping strategies, resilience-building techniques, and ways to maintain emotional well-being.
- Collaborating with multidisciplinary teams to offer holistic care that integrates emotional support into the overall treatment plan.

Recognizing the specific emotional needs of patients at different stages can help healthcare providers offer targeted interventions to enhance well-being. For patients in the early stages of cancer, healthcare providers can offer targeted interventions such as:

- Education and Information: Providing clear and comprehensive information about the diagnosis, treatment options, and potential side effects can help reduce anxiety and uncertainty.
- Psychosocial Support: Connecting patients with support groups, counselling services or psychologists can provide emotional guidance and a space to express feelings and concerns.
- Mindfulness and Stress-Reduction Techniques: Encouraging patients to practice mindfulness, meditation, or relaxation techniques can help manage stress and promote emotional well-being.
- Encouraging Social Connections: Encouraging patients to maintain social connections with friends and family can provide a strong support system during challenging times.

For patients in advanced stages of cancer, targeted interventions to enhance well-being may include:

- **Palliative Care:** Offering specialized palliative care services to manage symptoms, alleviate pain, and improve quality of life for patients facing advanced stages of cancer.
- **Emotional Support:** Providing access to social workers, counsellors, or therapists who specialize in supporting individuals dealing with terminal illnesses can help patients navigate complex emotions and address end-of-life concerns.
- **End-of-Life Planning:** Assisting patients in creating advance directives, discussing end-of-life preferences, and providing support for patients and their families during this challenging time.
- **Spiritual Support:** Offering spiritual or chaplaincy services for patients who find comfort in their faith or spirituality can be beneficial in coping with the emotional challenges of advanced cancer.

Understanding the emotional responses of patients to treatment intensity and prognosis is a fundamental aspect of healthcare that can significantly impact the quality of care and patient outcomes. When patients are faced with decisions regarding their treatment options and prognosis, they often experience a wide range of emotions, including fear, anxiety, hope, and uncertainty. These emotional responses play a crucial role in how patients perceive their treatment options, make decisions, and cope with their medical condition.

Shared decision-making, which involves active participation by both healthcare providers and patients in making healthcare decisions, is increasingly recognized as a key component of patient-centred care. By understanding and addressing the emotional responses of patients, healthcare providers can facilitate more meaningful and effective shared decision-making processes. For example, a patient who is feeling fearful or anxious about a particular treatment option may be more likely to focus on potential risks and side effects, which could influence their decision-making process. In contrast, a patient who is feeling hopeful may be more inclined to consider treatment options that offer the possibility of a positive outcome, even if those options come with higher risks. By acknowledging and addressing these emotional responses, healthcare providers can tailor their communication and support to meet the individual needs of each patient. This may involve providing additional information or resources to help patients better understand their options, offering emotional support and reassurance, or involving mental health professionals in the care team to address

psychological concerns. Ultimately, by taking into account the emotional responses of patients to treatment intensity and prognosis, healthcare providers can ensure that the care they provide is not only medically appropriate but also sensitive to the emotional well-being of the individual. This holistic approach to care can lead to better patient outcomes, increased satisfaction with the care received, and a stronger patient-provider relationship built on trust and collaboration.

The cancer journey is not just a physical battle but also an emotional and psychological one for patients and their loved ones [17]. Recognizing and addressing the psychosocial aspects of cancer care is crucial in ensuring that patients receive holistic support that meets their individual needs.

Social support plays a significant role in a patient's ability to cope with their diagnosis and treatment [18]. Research has shown that strong social connections can have a positive impact on mental health and quality of life for cancer patients. By incorporating social support interventions into the treatment plan, healthcare teams can help patients build and strengthen their support networks, which can provide emotional comfort, practical assistance, and a sense of belonging during a challenging time.

Emotional responses to cancer diagnosis and treatment can vary greatly among patients, ranging from fear and anxiety to sadness and anger. Providing psychosocial care that addresses these emotional responses can help patients better understand and manage their feelings, reduce distress, and improve their overall well-being. Therapeutic interventions such as counseling, psychotherapy, and mindfulness-based practices can empower patients to navigate their emotions, enhance their coping skills, and foster resilience in the face of adversity.

By incorporating psychosocial care into the treatment plan, healthcare teams can create a patient-centered approach that considers the whole person, not just their medical condition [19, 20]. This approach not only benefits patients by improving their emotional well-being and quality of life but also has been shown to positively impact treatment outcomes and patient satisfaction. By working collaboratively with patients to address their psychosocial needs, healthcare providers can build trust, enhance communication, and tailor care plans to each patient's unique circumstances, ultimately leading to better outcomes and improved overall care for oncology patients.

Future perspectives:

Future research in the field of oncology should continue to delve deeper into the dynamics of emotional states in patients across the disease continuum. Longitudinal studies tracking the emotional trajectories of individuals from diagnosis through survivorship or end-of-life care can provide valuable insights into how emotional well-being evolves over time.

Exploring the effectiveness of tailored interventions, such as psychotherapy, mindfulness-based practices, and support groups, in addressing the emotional needs of oncology patients at different disease stages is crucial. Integrating these interventions into standard cancer care protocols can enhance the holistic approach to patient care and improve overall treatment outcomes.

Additionally, leveraging advancements in technology, such as telemedicine and mobile health applications, to deliver remote emotional support services to oncology patients can expand access to psychosocial care, particularly for those in underserved or rural areas. Collaborative efforts between healthcare professionals, researchers, and patient advocacy groups are essential in shaping the future of emotional support for individuals navigating the challenges of cancer diagnosis and treatment.

CONCLUSIONS

Throughout this comprehensive study several key findings have emerged. The intricate relationship between emotional states such as hope, anxiety, fear, and acceptance and the stage of the disease has been illuminated, providing valuable insights into the psychosocial aspects of cancer care. Patients in the early stages of cancer often exhibit a sense of hope and determination, fueling their resilience and proactive approach to treatment. However, as the

disease progresses, feelings of anxiety and fear may become more prominent, stemming from uncertainties about the future and the challenges associated with advanced stages of cancer. Despite these challenges, a remarkable sense of acceptance and peace can also be observed in some patients, reflecting their ability to find meaning and serenity amidst adversity.

By acknowledging and addressing these emotional nuances, healthcare providers can offer more personalized and holistic support to oncology patients. Tailoring interventions to meet the specific emotional needs of individuals at different disease stages is crucial for enhancing their overall well-being and treatment experiences. Fostering open communication and empathy within the healthcare setting can help create a supportive environment where patients feel heard, understood, and empowered in their cancer journey. Moving forward, it is imperative for healthcare professionals to integrate psychosocial care into standard oncology prac-

tice, recognizing the profound impact of emotional well-being on treatment outcomes and quality of life. By embracing a patient-centered approach that prioritizes emotional support alongside medical interventions, we can strive towards comprehensive and compassionate cancer care that honors the unique experiences and emotions of each individual battling this disease.

The varying patterns of hope, anxiety, fear, and acceptance observed among patients at different stages highlight the importance of recognizing and addressing the emotional challenges inherent in the cancer journey. By understanding these emotional dynamics and their impact on patients' well-being, healthcare providers can tailor support interventions to meet the specific needs of individuals at various disease stages. Moving forward, a holistic approach to cancer care that integrates emotional support alongside medical treatment is essential for improving the overall quality of life and treatment outcomes for oncology patient.

REFERENCES

1. Mehta RD, Roth AJ. Psychiatric considerations in the oncology setting. *CA Cancer J Clin*. 2015;65:299-314.
2. Gordon H. *Oncogenes*. *Mayo Clin Proc*. 1985;60:697-713.
3. Rajput A, Osmani RAM, Singh E, Banerjee R. Cancer: A sui generis threat and its global impact. In: *Biosensor Based Advanced Cancer Diagnostics*. Acad Press. 2022.1-25.
4. Gilman A, Arkin AP. Genetic "code": representations and dynamical models of genetic components and networks. *Annu Rev Genomics Hum Genet*. 2002;3:341-369.
5. Sonnenschein C, Soto AM. Theories of carcinogenesis: an emerging perspective. *Semin Cancer Biol*. 2008;18:372-377.
6. Stein KD, Syrjala KL, Andrykowski MA. Physical and psychological long-term and late effects of cancer. *Cancer*. 2008;112:2577-2592.
7. Lutgendorf SK, Sood AK. Biobehavioral factors and cancer progression: physiological pathways and mechanisms. *Psychosom Med*. 2011;73:724-730.
8. Beurel E, Toups M, Nemeroff CB. The bidirectional relationship of depression and inflammation: double trouble. *Neuron*. 2020;107:234-256.
9. Savino W, Mendes-da-Cruz DA, Lepletier A, Dardenne M. Hormonal control of T-cell development in health and disease. *Nat Rev Endocrinol*. 2016;12:77-89.
10. Carmel S, Tovel H, Raveis VH, O'Rourke N. Is a decline in will to live a consequence or predictor of depression in late life?. *J Am Geriatr Soc*. 2018;66:1290-1295.
11. Brennan J, Moynihan C. *Cancer in context: A practical guide to supportive care*. Oxf Med Publ. 2004.
12. Kübler-Ross E, Kessler D. *On grief and grieving: Finding the meaning of grief through the five stages of loss*. Simon Schuster. 2014.
13. Andersen BL, DeRubeis RJ, Berman BS, Gruman J, Champion VL, et al. Screening, assessment, and care of anxiety and depressive symptoms in adults with cancer: an American Society of Clinical Oncology guideline adaptation. *J Clin Oncol*. 2014;32:1605.
14. Levy A, Cartwright T. Men's strategies for preserving emotional well-being in advanced prostate cancer: An interpretative phenomenological analysis. *Psychol Health*. 2015;30:1164-1182.
15. Tan JY, Molassiotis A, Lloyd-Williams M, Yorke J. Burden, emotional distress and quality of life among informal caregivers of lung cancer patients: An exploratory study. *Eur J Cancer Care*. 2018;27:12691.
16. Palacio C, Krikorian A, Limonero JT. The influence of psychological factors on the burden of caregivers of patients with advanced cancer: Resilience and caregiver burden. *Palliat Support Care*. 2018;16:269-277.
17. Aubin M, Vézina L, Verreault R, Simard S, Hudon É, et al. Distress experienced by lung cancer patients and their family caregivers in the first year of their cancer journey. *Palliat Support Care*. 2022;20:15-21.
18. Samadi Sh, Shahvari Z. Professionalism workshops tailored for nurses. *J Med Ethics Hist*. 2019;12:14.
19. Alipour F, Shahvari Z, Asghari F, Samadi S, Amini H. Personal factors affecting medical professionalism: a qualitative study in Iran. *J Med Ethics Hist Med*. 2020;13:3.
20. Samadi Sh, Shahvari Z. Professionalism in Anesthesiology; A Qualitative Meta-Synthesis. *J Iran Med Council*. 2022;5:638-648.



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