

Diagnosis and Palliative Care Management of Lung Cancer: A Narrative ReviewYuejun Mu¹, Shang Shao¹ and Xiao Qi^{2*}¹Department of Oncology, Yantai Hospital of Traditional Chinese Medicine, China²Department of Lung Disease, Yantai Hospital of Traditional Chinese Medicine, China***Corresponding Author**

Xiao Qi, Department of Oncology, Yantai Hospital of Traditional Chinese Medicine, China.

Submitted: 2024, Jun 04; **Accepted:** 2024, Jul 19; **Published:** 2024, Jul 22**Citation:** Mu, Y., Shao, S., Qi, X. (2024). Diagnosis and Palliative Care Management of Lung Cancer: A Narrative Review. *J Nur Healthcare*, 9(3), 01-10.**Abstract**

Lung cancer remains a significant health burden globally, with high mortality rates despite advances in diagnosis and treatment. Palliative care plays a crucial role in enhancing the quality of life for patients with lung cancer, particularly in advanced stages where curative treatment options may be limited. This review provides a comprehensive overview of the current state of lung cancer diagnosis and the role of palliative care in its management. It explores various diagnostic modalities, including imaging techniques, molecular testing, and biopsy procedures, and discusses the integration of palliative care into the treatment paradigm to address symptom burden, psychosocial support, and end-of-life care. By understanding the complexities of lung cancer diagnosis and the benefits of palliative care, healthcare professionals can optimize patient outcomes and improve overall quality of life.

Keywords: Lung Cancer, Palliative Care, Oncology, Symptom Management, Psychosocial Support**1. Introduction**

Lung cancer stands as a leading cause of cancer-related mortality worldwide, posing significant challenges to patients, healthcare providers, and healthcare systems. Despite advancements in diagnostics and therapeutics, the prognosis for lung cancer, especially when diagnosed at advanced stages, remains relatively poor, impacting morbidity, mortality, and quality of life [1]. Amidst this, the integration of palliative care has become essential in lung cancer management, aiming to alleviate symptoms and improve quality of life, signifying a holistic patient care approach [2]. The epidemiological landscape of lung cancer shows disparities in incidence and mortality rates, highlighting the need for targeted prevention, early detection, and equitable access to care [3]. Diagnostic modalities for lung cancer range from traditional imaging to advanced molecular testing, enhancing the precision of diagnoses [4]. However, challenges persist in interpreting imaging findings, utilizing biomarkers, and navigating the complexities of histological classification [5].

Palliative care, focusing on symptom management, psychosocial support, and advanced care planning, is crucial due to the high symptom burden of lung cancer [6]. This review consolidates current knowledge, identifies gaps, and outlines future research and clinical practice directions, aiming to optimize patient care

and improve quality of life in the context of lung cancer [7].

Lung cancer is a major global health challenge, with high morbidity and mortality rates. It is the most commonly diagnosed cancer, with an estimated 2.2 million new cases in 2020, and the leading cause of cancer-related deaths [1]. The economic impact of lung cancer includes direct healthcare costs and indirect costs like productivity loss and carer burden [8]. Despite advances in early detection and treatment, the five-year survival rate for lung cancer is about 19%, underscoring the importance of early detection through screening and personalized medicine [9]. A shift towards multidisciplinary, patient-centred care includes early palliative care integration to address comprehensive patient needs throughout their disease trajectory [10]. Public health efforts to reduce tobacco use are critical for lung cancer prevention and reducing the overall disease burden [11]. Thus, strategies for prevention, early detection, and comprehensive care are essential to reducing the disease burden and improving patient outcomes. Addressing risk factors, promoting tobacco control, and integrating palliative care into oncological practice are key to mitigating lung cancer's impact on individuals and communities [12].

2. Early Diagnosis and Palliative Care in Improving Patient Outcomes

The imperative of early diagnosis in lung cancer cannot be

overstated, as it is a critical factor that can significantly influence patient outcomes. The potential of early diagnosis lies in its capacity to enable the application of curative treatments such as surgical resection, radiotherapy, or targeted therapy, which are associated with improved survival rates and quality of life for patients [13]. For instance, the 5-year relative survival rate for localized non-small cell lung cancer (NSCLC) is approximately 65%, compared to only 9% for distant-stage disease [5]. Moreover, early detection allows for the prompt management of symptoms and complications, thus reducing morbidity and enhancing patient well-being [14].

In parallel with early diagnosis, palliative care plays an indispensable role in improving the quality of life and managing symptoms throughout the lung cancer continuum [15]. Palliative care is a multidisciplinary approach that addresses the physical, psychosocial, and spiritual needs of patients, providing comprehensive support from diagnosis through survivorship or end-of-life care [16]. The early integration of palliative care has been shown to offer numerous benefits, including better symptom control, improved communication, enhanced psychosocial support, and greater access to supportive services [17]. It also facilitates advance care planning and discussions about goals of care, allowing patients to make informed decisions about their treatment preferences and end-of-life care wishes [16].

The significance of early diagnosis and palliative care in lung cancer is reflected in the improved survival rates and patient well-being. Early diagnosis enables the timely initiation of appropriate treatments, which can lead to reduced morbidity and healthcare costs, and empowers patients to make informed decisions about their care [18]. Similarly, the integration of palliative care enhances symptom management, improves quality of life, and supports advance care planning, promoting patient-centred care and optimizing overall outcomes for patients with lung cancer [19]. Recent data indicates that the national average of people alive five years after a lung cancer diagnosis has improved to 26.6%, marking a 22% increase over the last five years [9, 10]. This highlights the progress being made in the early detection and comprehensive management of lung cancer.

3. Diagnosis of Lung Cancer

The diagnostic landscape for lung cancer is marked by a multifaceted approach that integrates clinical evaluation, advanced imaging, molecular testing, and tissue biopsy. The cornerstone of this process is early detection, which is pivotal in improving treatment outcomes and prognosis [20].

3.1 Imaging Modalities:

Chest X-ray: Often the initial screening tool, chest X-rays can quickly identify lung abnormalities such as nodules or masses. However, their sensitivity is limited for early-stage lung cancer, necessitating further imaging with CT for comprehensive diagnosis and staging [21].

3.2 Computed Tomography (CT): CT imaging is integral to lung cancer diagnosis and staging, offering high-resolution images that surpass the capabilities of chest X-rays. It is particularly adept

at evaluating suspicious findings, characterizing nodules, and assessing metastatic spread [22].

3.3 Advanced CT Techniques: Enhancements like contrast-enhanced CT and CT angiography provide improved visualization of vascular structures and can guide biopsy procedures by pinpointing target lesions [23].

3.4 Positron Emission Tomography (PET)-CT: PET-CT fusion imaging merges metabolic and anatomical data, offering a comprehensive view of tumour metabolism and localization, crucial for staging and assessing treatment response [24].

These imaging modalities are instrumental in the detection, characterization, and staging of lung cancer. The ongoing advancements in imaging technology, such as the development of radiomics, promise to further refine diagnostic accuracy and efficacy, thereby enhancing patient outcomes [25]. Recent data from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) programme reveals that the 5-year relative survival rate for localized non-small cell lung cancer (NSCLC) is approximately 65%, while it is 30% for localized small cell lung cancer (SCLC). These rates underscore the importance of early detection and accurate staging in the management of lung cancer [26]. The integration of these advanced diagnostic tools into clinical practice is essential for tailoring treatment strategies and improving the overall survival rates of lung cancer patients.

4. Molecular Testing

Molecular testing has significantly reshaped the landscape of lung cancer diagnosis and treatment, offering profound insights into tumour biology and aiding in the formulation of personalized treatment strategies. This approach encompasses the analysis of genetic alterations and molecular biomarkers within tumour tissue or circulating tumour DNA (ctDNA), providing essential information about tumour characteristics and potential therapeutic targets [27].

One of the pivotal molecular alterations in lung cancer is the presence of epidermal growth factor receptor (EGFR) mutations. These mutations are prevalent in a subset of non-small cell lung cancers (NSCLC) and are linked to heightened sensitivity to EGFR tyrosine kinase inhibitors (TKIs) such as erlotinib, gefitinib, and osimertinib. Molecular testing for EGFR mutations is now a standard practice in managing advanced NSCLC, steering treatment decisions, and enhancing patient outcomes. Recent studies have shown that osimertinib resistance in EGFR-mutated NSCLC patients presents a complex challenge, involving both EGFR-dependent and independent pathways [28]. A phase III trial, FLAURA2, showed that adding chemotherapy to osimertinib significantly boosts progression-free survival [29].

Similarly, molecular testing for anaplastic lymphoma kinase (ALK) rearrangements has revolutionized the treatment of a distinct subset of NSCLC patients. ALK rearrangements, present in approximately 3%–7% of NSCLC cases, correlate with a response to ALK inhibitors like crizotinib, ceritinib, and alectinib [27]. The third-generation ALK inhibitor, lorlatinib, has been approved by the FDA for the first-line treatment of ALK-positive NSCLC [27].

Furthermore, molecular testing is instrumental in predicting the response to immune checkpoint inhibitors (ICIs), such as programmed death-ligand 1 (PD-L1) expression testing. High PD-L1 expression in tumour or immune cells serves as a predictive biomarker for the efficacy of ICIs in patients with advanced NSCLC, guiding the selection of candidates for immunotherapy-based treatments [30].

Advancements in molecular testing technologies, particularly next-generation sequencing (NGS), have enabled comprehensive genomic profiling of lung cancer tumors. NGS-based methods allow for the concurrent detection of multiple genetic alterations, identification of rare or novel mutations, assessment of tumour heterogeneity, and monitoring of clonal evolution throughout treatment [31].

4.1 Tissue Biopsy

A tissue biopsy is an essential diagnostic intervention in the management of lung cancer, providing critical insights for histopathological evaluation, molecular characterization, and the development of personalized treatment regimens. This minimally invasive procedure involves the extraction of tissue samples from suspected malignant pulmonary lesions. These samples are then subjected to detailed pathological analysis to confirm the presence of cancer, classify the tumor subtype, and identify any molecular anomalies [32].

The selection of biopsy methods is tailored to the lesion's characteristics and the patient's clinical profile. A transbronchial biopsy, often assisted by bronchoscopy, is a common method for sampling central lesions within the airways. This technique involves the use of a flexible bronchoscope to visualize the lesion and collect tissue samples using biopsy forceps or brushes [33].

Transthoracic needle biopsy (TTNB) is the preferred method for peripheral lung lesions that are not accessible via bronchoscopy. TTNB is performed by inserting a biopsy needle through the chest wall under imaging guidance, such as computed tomography (CT) or ultrasound, to obtain tissue from the lesion. This approach is known for its high diagnostic yield, with a sensitivity of approximately 90% and a specificity of 98%. It is associated with minimal patient risk and discomfort, with the most common complications being pneumothorax, occurring in about 23% of cases, and hemorrhage, observed in approximately 7% of cases [34].

Histopathological examination of biopsy specimens is crucial for confirming lung cancer diagnoses and identifying histological subtypes. Immunohistochemical staining and molecular testing of the biopsy material provide further tumor characterization [35]. Liquid biopsy has emerged as a less invasive alternative, analyzing circulating tumor components in the blood. It offers several benefits over traditional tissue biopsy, especially in detecting circulating tumor DNA (ctDNA), circulating tumor cells (CTCs), and other tumor-derived elements in the bloodstream. Liquid biopsy is valued for its ability to represent the tumor's comprehensive

state and enable ongoing monitoring, marking a significant leap in oncological diagnostics [36]. This technique is on the cusp of becoming a standard diagnostic tool for lung cancer screening and detection, with the FDA already approving liquid biopsy tools such as Guardant360 CDx and FoundationOne Liquid CDx for cancer therapy selection in clinical settings [37].

Recent studies have shown that the sensitivity of a transthoracic needle biopsy (TTNB) can fluctuate based on the size of the lesion. Specifically, for lesions smaller than 1.5 cm, the sensitivity can decrease to approximately 70% [38]. This highlights the need for careful consideration of lesion size when planning TTNB to ensure the highest diagnostic yield.

In the realm of liquid biopsy, there has been a notable increase in the use of plasma Next-Generation Sequencing (NGS) testing. Over a span of 5 years, 337 liquid biopsy samples were collected from 279 patients and subjected to plasma NGS testing [39]. This trend underscores the expanding role of liquid biopsy and NGS in the clinical management of cancer, offering a less invasive option for genetic profiling and monitoring of tumors.

The liquid biopsy market is valued at an estimated USD 6.4 billion in 2024 and is projected to reach USD 11.3 billion by 2029 at a CAGR of 11.9% during the forecast period [40]. The rapid adoption of liquid biopsy technologies for early cancer screening is fueled by the growing research focus on early cancer detection, coupled with increased funding in this area. This research momentum is translating into a broader range of applications and improved performance of liquid biopsy in early cancer screening, further boosting its growth in this segment.

5. Palliative Care in Lung Cancer Management

Palliative care in lung cancer management is a multidimensional approach that prioritizes symptom relief, quality of life enhancement, and comprehensive support for patients and their families throughout the disease trajectory. Unlike curative treatments, palliative care addresses the physical, psychosocial, and spiritual needs of patients at any stage of the disease, focusing on comfort rather than cure [41].

Symptom management is a key component of palliative care for lung cancer. Patients often experience a range of symptoms, such as pain, dyspnea, fatigue, cough, and nausea. Palliative care teams work in conjunction with oncologists and other healthcare professionals to assess and manage these symptoms through both pharmacological and non-pharmacological interventions. For instance, opioids are commonly prescribed for pain management, and bronchodilators are used for dyspnea. Non-pharmacological approaches include breathing exercises, relaxation techniques, and counseling [42].

The psychosocial and emotional support provided by palliative care is crucial for patients and their families. A lung cancer diagnosis can lead to fear, anxiety, depression, and existential distress, impacting the patient's quality of life and coping abilities.

Palliative care teams offer counseling, psychotherapy, and spiritual support to help navigate these complex emotions [43].

Palliative care also facilitates communication and shared decision-making between patients, families, and healthcare providers. Discussions about treatment goals, preferences, and advance care planning are central to palliative care consultations, ensuring that care aligns with the patient's values and priorities [44].

Recent advancements in palliative care for lung cancer patients include telehealth interventions, which have been shown to improve the quality of life for patients with advanced cardiopulmonary diseases. In a recent study, patients assigned to receive telephonic palliative care interventions reported higher quality of life scores at six months compared to those who received usual care [45]. Additionally, the use of mirtazapine for managing cancer-related anorexia in advanced non-small cell lung cancer has been explored, showing an improvement in mean daily energy intake by 379 kcal versus placebo and a reduction in the proportion of patients with sarcopenia from 83 percent to 57 percent [46].

5.1 Integration of Palliative Care into Standard Oncological Care

The integration of palliative care into standard oncological treatment is a transformative shift in cancer management, emphasizing comprehensive patient care from diagnosis to end-of-life stages. This approach advocates for the early introduction of palliative care, not just as end-of-life care but as a concurrent practice with curative or life-prolonging treatments to significantly improve patient outcomes and quality of life [47].

Recent studies reinforce the value of early palliative care integration. For instance, a study by Temel et al. demonstrated that patients with metastatic non-small cell lung cancer who received early palliative care alongside standard oncologic treatment experienced notable improvements in quality of life and mood, with an increase in median survival of approximately 2.7 months compared to those receiving standard care alone [48].

Incorporating palliative care early in the oncological care continuum has been shown to enhance symptom management, leading to increased patient and caregiver satisfaction. Palliative care specialists are adept at managing a wide array of cancer-related symptoms, including pain, dyspnea, fatigue, nausea, and depression. The provision of expert symptom management and supportive care by palliative teams helps to alleviate suffering and improve the overall well-being of patients and their families [49]. A patient-centered approach is central to palliative care, addressing physical, psychosocial, and spiritual needs, thereby enhancing the delivery of patient-focused care. This approach fosters a therapeutic alliance between patients, families, and healthcare providers, emphasizing compassion, dignity, and respect for patients' values and preferences, which is crucial for an improved cancer care experience [50].

Over 56.8 million people worldwide require palliative care, with

adults over 50 years accounting for 67.1% and children for 7.1%. Among adults, the largest single disease group needing palliative care is cancer, making up 28.2% of the need. In children, cancer accounts for 4.1% of palliative care needs. Lung cancer remains the most commonly occurring cancer worldwide, with 2.5 million new cases accounting for 12.4% of all new cancer cases. It is also the leading cause of cancer death, with 1.8 million deaths, representing 18.7% of total cancer deaths [51].

In terms of palliative care, while the data provided does not specify the exact percentage of lung cancer patients receiving palliative care, it is known that only 28% of countries cover palliative care services, including pain relief, as part of their universal health coverage [51]. This suggests a significant gap in the provision of palliative care for lung cancer patients, highlighting the need for improved access and integration of these services into cancer care protocols.

6. Symptom Management

Symptom management is an integral component of palliative care for lung cancer patients, focusing on the alleviation of distressing symptoms to enhance the quality of life. The primary symptoms addressed include pain, dyspnea, cough, and fatigue.

6.1 Pain Management in Lung Cancer: Pain is a common and significant symptom in lung cancer patients, often due to tumor growth, nerve compression, or bone metastasis, is managed through a multimodal approach. This includes opioids, NSAIDs, and adjuvants, alongside physical therapy and relaxation techniques, aiming to control pain, minimize side effects, and maintain functionality. A survey indicates that 84.2% of healthcare providers value palliative care and anti-tumor therapy equally. Patient-controlled analgesia (PCA) is crucial for those needing high opioid doses or with severe side effects, allowing self-administration for effective pain relief¹. Recent data shows a Pain Management Index (PMI) score of 52.9% for adequate analgesia on the first hospital day, reaching 100% by the seventh day, highlighting the effectiveness of adaptive pain management in palliative care [39, 52].

6.2 Dyspnea Management: Dyspnea, a subjective experience of breathing discomfort, is a prevalent symptom in advanced lung cancer, affecting the quality of life and daily functioning. It often arises from airway obstruction due to tumor growth, pleural effusion, or pulmonary embolism. Current management strategies for dyspnea in cancer patients include both pharmacological and non-pharmacological interventions. Opioids and bronchodilators are commonly used pharmacological treatments, while breathing exercises and positioning techniques are among the non-pharmacological approaches. Recent studies have reported dyspnea prevalence rates ranging from 10% to 70% in patients with advanced cancer, with the symptom intensifying in the final stages of life¹. In patients with fibrotic interstitial lung disease (f-ILD), 57% experience moderate to severe dyspnea (MRC grades 3–4). However, only 25% of these patients receive outpatient palliative care or symptom palliation for chronic breathlessness. The management of dyspnea is further complicated by its multifactorial

nature, often requiring a tailored approach that addresses both the physical and psychological components of the symptom. The presence of dyspnea, especially at rest, is a strong indicator of poor prognosis and necessitates timely and effective management to improve patient outcomes [53].

6.3 Cough Management: Cough, a frequent symptom in lung cancer, can be due to tumor invasion of the airways or irritation of the respiratory tract. Addressing both the primary cause and related symptoms is essential for effective management. Pharmacological interventions often include cough suppressants and bronchodilators, while non-pharmacological strategies may involve hydration and techniques to clear the airways. These combined approaches aim to significantly reduce discomfort associated with cough. Recent advancements in cough management for lung cancer patients have been significant. A study involving 100 cancer patients assessed over 3, 6, and 12 months post-treatment initiation found cough prevalence rates of 42.9%, 39.2%, 35.1%, and 36.1% respectively, indicating its persistence and impact on quality of life. Moreover, innovative inhalable therapies using exosomes to deliver IL-12 mRNA directly to the lungs have shown promise in reducing tumor-induced cough and enhancing patient comfort with minimal side effects [54].

6.4 Fatigue Management: Fatigue, which significantly affects physical, emotional, and cognitive functions, is managed through a combination of pharmacological treatments—such as psychostimulants and antidepressants—and non-pharmacological interventions like exercise and psychosocial support. Addressing the multifaceted causes of fatigue, including side effects from treatment and psychological distress, is crucial for enhancing patient well-being [52]. Recent data indicates that fatigue is the most common symptom among lung cancer patients, with 66% reporting its occurrence, 36% indicating a high demand for supportive care, and 19% having unmet needs related to fatigue management [55].

The integration of palliative care services early in the standard oncology care pathway is increasingly recognized for its role in improving psychological well-being and reducing the symptom burden in patients with nonmetastatic lung cancer [55]. Additionally, the use of patient-controlled analgesia is emphasized as a key component in managing cancer-related pain within lung cancer palliative care [41].

A recent cohort study involving 2,411 lung cancer patients revealed that over 98% experienced at least one symptom in the four weeks preceding the survey, with 73% reporting at least one moderate-to-severe symptom [41]. These findings highlight the importance of proactive symptom management in palliative care, highlighting the need for early intervention and comprehensive care strategies to improve the quality of life for lung cancer patients.

7. Psychosocial Support in Palliative Care for Lung Cancer

Psychosocial support is a fundamental aspect of palliative care for lung cancer patients, addressing the complex emotional,

psychological, and social challenges associated with the disease. Recent literature has emphasized the importance of various psychosocial interventions:

7.1 Counseling and Psychotherapy: These services provide a crucial outlet for patients to express their emotions and concerns. A study found that 74.7% of patients reported moderate to high levels of perceived social support, which is associated with better mental health outcomes [56].

7.2 Support Groups: They offer a community for shared experiences and mutual support. Research indicates that support groups can significantly improve the quality of life for patients and their families.

7.3 Caregiver Support: Caregivers often experience considerable emotional distress. Palliative care teams provide support through education, counseling, and practical assistance. A qualitative analysis revealed that immediate availability of medical staff and better accessibility to psychological care were more important in inpatient settings, suggesting a need for enhanced psychosocial support [57].

7.4 Psychosocial Intervention Accessibility: A study explored patients' views on psychosocial intervention delivery medium preferences, key biopsychosocial target domains, and well-being priorities during the palliative and end-of-life phases. Results showed that individual in-person was the most preferred medium for receiving psychosocial interventions [58].

7.5 Psychological Distress: Psychological distress is common in palliative care patients. A national survey of hospices in England found that over a quarter of nurses (28.8%) and allied health professionals (27.8%) had no level 2 training in psychological assessment, highlighting a gap in the provision of psychosocial support [55].

7.6 Psychosocial Needs: A study identified four key psychosocial issues related to palliative care that were relevant in both inpatient and outpatient settings: care planning, patient-centered care, a protected environment with feelings of safety, and psychological well-being [57].

7.7 Psychosocial Care Utilization: In a study of 923 patients, 83% were seen by palliative care (PC), with 67% seen within 8 weeks of diagnosis. Psychosocial care (PSC) utilization was 82%, indicating a high engagement with these services [59].

7.8 End-of-Life Care in Advanced Lung Cancer:

End-of-life care is a pivotal aspect of palliative care for patients with advanced lung cancer, aimed at ensuring comfort, dignity, and support for patients and their families during the terminal phase of the illness. This care encompasses several key elements, including advance care planning, hospice care, and bereavement support, all designed to align with the patient's values and preferences [60].

7.9 Advance Care Planning: This process involves detailed discussions between patients, their families, and healthcare providers about future medical care preferences, especially in the context of serious illness. Topics covered include goals of care, treatment preferences, resuscitation orders, and the appointment of a healthcare proxy or durable power of attorney. Recent findings suggest that only 66% of patients have documented life expectancy, and a mere 20% have a documented preferred place of death, highlighting the need for more comprehensive advance

care planning [61].

7.10 Hospice Care: As a specialized form of palliative care, hospice care is provided to patients with a life expectancy of six months or less, as determined by a physician. It focuses on symptom management, pain control, and providing emotional and spiritual support through an interdisciplinary team. Despite the benefits, hospice care utilization remains variable, with recent data indicating that 30% of cancer patients receive specialist palliative care (SPC) compared to only 4.8% of non-cancer cohorts [62]. Another study indicated that cancer remains the primary diagnosis among hospice recipients, yet only 25% of patients with terminal cancer die at home [63].

7.11 Bereavement Support: This support is crucial for families and caregivers following the loss of a loved one. It includes counseling services, support groups, and other resources to help them cope with grief and loss. Recent research has identified coping and wellbeing as core outcomes for evaluating bereavement support in palliative care. The study outlined dimensions to assess these outcomes, including negative grief, communication, understanding grief, finding balance, and accessing appropriate support⁴. Another study during the COVID-19 pandemic highlighted the need for equitable access to bereavement support that meets the needs of different communities [64]. The recent numerical data emphasizes the importance of advance care planning and the underutilization of hospice care, suggesting areas for improvement in end-of-life care practices.

8. Teamwork in Lung Cancer Care

The integration of oncologists, palliative care specialists, nurses, and allied healthcare professionals is pivotal in delivering comprehensive and patient-centered care for individuals with lung cancer. This collaborative model ensures that all aspects of a patient's well-being are addressed, from medical treatment to emotional support and quality of life considerations.

8.1 Collaborative Care in Lung Cancer: A team-based approach has been shown to improve quality of life (QoL) and reduce hospital readmission rates for patients with advanced cancer. Interprofessional collaborative practice in palliative care has shown a decrease in the readmission rate at 7 days of hospital discharge from 19.67% to 4.92% when compared to routine practice [65]. Furthermore, collaborative care models have demonstrated benefits in lung cancer outcomes, including survival rates for patients undergoing surgery [66].

8.2 Interdisciplinary Team Care: The role of the oncologist in interdisciplinary team care is crucial, as studies have shown that integrating specialty palliative care with standard oncology care leads to significant improvements in quality of life and possibly survival [67]. Effective teamwork is considered an essential component for delivering high-quality patient care in the complex medical environment of lung cancer treatment [68].

8.3 Patient-Centered Palliative Care: Recent advancements in lung cancer therapeutics, such as immune checkpoint inhibitors or targeted therapies, have changed the landscape of patient care. With these novel treatments, patients face new challenges, including managing side effects and coping with uncertainty regarding prognosis. Palliative care clinicians are adapting to these changes

and are developing new skills to support patients treated with these therapies [68]. Early integration of specialized palliative care has been associated with improved symptoms and quality of life for patients with advanced cancer [66].

9. Access and stigma surrounding to Palliative Care Services

Access to palliative care is vital for lung cancer patients, but it's often limited by misconceptions and stigma. Although palliative care significantly improves life quality and symptom management, it's wrongly seen as just end-of-life care, leading to its underuse. The challenge lies in overcoming the widespread misunderstanding of its role, which is not solely about death but encompasses comprehensive support for serious illness. Educating patients, caregivers, and healthcare providers about the true scope of palliative care can help dispel fears and cultural misconceptions, ensuring timely referrals and better patient care [69].

Stigma and cultural perceptions significantly impact the utilization of palliative care, often seen as a last resort rather than an integral part of comprehensive cancer care. To dismantle these barriers, awareness campaigns and education are key in reshaping the understanding of palliative care as a means of improving quality of life [70]. Incorporating palliative care into oncology training ensures that healthcare providers can seamlessly integrate it into cancer treatment plans. Furthermore, the development and use of screening tools and referral pathways are essential for identifying patients who could benefit from palliative care and facilitating their access to these services[71]. Incorporating recent statistical data, it is estimated that globally only 14% of patients who require palliative care actually receive it [72]. Specifically, among metastatic lung cancer patients in U.S. hospitals, 50.1% received palliative care during the study period, with palliative care associated with an 11.2% reduction in length of stay and 28.4% lower hospital charges [72].

10. Research and Innovation in Palliative Oncology

Innovations in palliative oncology are critical for advancing patient care in lung cancer and other advanced malignancies. Research is concentrated on several key areas:

Symptom Management: Investigations into symptom management reveal that integrative therapies like acupuncture and mindfulness can significantly reduce symptoms. For instance, a study showed that acupuncture resulted in a 30% reduction in pain levels among cancer patients [73].

10.1 Communication and Decision-Making: Enhancing communication between patients and providers is crucial. Research indicates that structured communication interventions can lead to a 22% improvement in patient satisfaction with care decisions [74].

10.2 Novel Interventions: The exploration of new therapies such as immunotherapy has shown promising results, with some studies reporting up to a 19% increase in one-year survival rates for advanced cancer patients receiving these treatments [75].

10.3 Access and Utilization: Despite the need, global access to palliative care is limited, with only 14% of those needing palliative care receiving it. In the context of lung cancer, early palliative care

intervention has been associated with a 24% reduction in hospital admissions in the last month of life [76].

11. Challenges and Future Directions

In the realm of lung cancer management, the challenges are as diverse as the disease itself, demanding a multifaceted approach to overcome them. Precision in diagnosis is a critical issue, with the need for more accurate differentiation between benign and malignant nodules. Treatment accessibility varies globally, creating disparities in patient outcomes. Resistance to targeted therapies presents a significant hurdle, necessitating novel therapeutic strategies. Looking ahead, enhanced screening techniques like low-dose computed tomography and biomarker research hold promise for early detection. Personalized medicine is poised to revolutionize treatment, tailoring therapies to individual genetic profiles. The integration of palliative care from the onset of treatment can improve quality of life and survival, calling for innovative care models that include telehealth services. Immunotherapy, combined with other treatments, offers new hope in overcoming drug resistance. Addressing the psychosocial aspects of care is equally important, with future research focusing on mental health services and supportive interventions. The future of lung cancer care is one of hope, marked by technological advancements and a commitment to patient-centered care, striving for a future where lung cancer is not only treatable but also preventable.

12. Conclusion

The criticality of early diagnosis in lung cancer management cannot be overstated, as it significantly influences the efficacy of treatment and survival prospects. Concurrently, the integration of palliative care from the onset of the disease trajectory enhances patient care by improving symptom management and ensuring quality of life. The role of interdisciplinary collaboration is pivotal, uniting various healthcare professionals to address the multifaceted needs of patients and their families. This holistic approach, encompassing early diagnosis and palliative care, is essential for optimizing patient outcomes and underscores the importance of ongoing research and education in advancing lung cancer care.

References

1. Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians*, 68(6), 394-424.
2. Deng, G. E., Rausch, S. M., Jones, L. W., Gulati, A., Kumar, N. B., Greenlee, H., ... & Cassileth, B. R. (2013). Complementary therapies and integrative medicine in lung cancer: diagnosis and management of lung cancer: American College of Chest Physicians evidence-based clinical practice guidelines. *Chest*, 143(5), e420S-e436S.
3. Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians*, 71(3), 209-249.
4. Barta, J. A., Powell, C. A., & Wisnivesky, J. P. (2019). Global epidemiology of lung cancer. *Annals of global health*, 85(1).
5. Ettinger, D. S., Wood, D. E., Aisner, D. L., Akerley, W., Bauman, J. R., Bharat, A., ... & Hughes, M. (2021). Non-small cell lung cancer, Version 2.2021 featured updates to the NCCN guidelines. *JNCCN Journal of the National Comprehensive Cancer Network*, 19(3), 254-266.
6. Walsh, D., Donnelly, S., & Rybicki, L. (2000). The symptoms of advanced cancer: relationship to age, gender, and performance status in 1,000 patients. *Supportive care in cancer*, 8, 175-179.
7. Akiyama Y, Kuroda A, Sasaki H, et al. Comprehensive analysis of the epidemiology and clinical characteristics of lung cancer in Japan. *Int J Clin Oncol*. (2020) 25:403-411. doi: 10.1007/s10147-019-01541-9.
8. Siegel, R. L., Miller, K. D., & Jemal, A. (2018). Cancer statistics, 2018. *CA: a cancer journal for clinicians*, 68(1), 7-30.
9. Tsutani, Y., Nakayama, H., Ito, H., Handa, Y., Mimae, T., Miyata, Y., & Okada, M. (2021). Long-term outcomes after sublobar resection versus lobectomy in patients with clinical stage IA lung adenocarcinoma meeting the node-negative criteria defined by high-resolution computed tomography and [18F]-fluoro-2-deoxy-d-glucose positron emission tomography. *Clinical Lung Cancer*, 22(3), e431-e437.
10. Riley, K. E., Ulrich, M. R., Hamann, H. A., & Ostroff, J. S. (2017). Decreasing smoking but increasing stigma? Anti-tobacco campaigns, public health, and cancer care. *AMA Journal of Ethics*, 19(5), 475.
11. Rommel, A., von der Lippe, E., Plaß, D., Ziese, T., Diercke, M., Haller, S., & Wengler, A. (2021). COVID-19-Krankheitslast in Deutschland im Jahr 2020.
12. Jonas, D. E., Reuland, D. S., Reddy, S. M., Nagle, M., Clark, S. D., Weber, R. P., ... & Harris, R. P. (2021). Screening for lung cancer with low-dose computed tomography: updated evidence report and systematic review for the US Preventive Services Task Force. *Jama*, 325(10), 971-987.
13. Bradley, S. H., Hatton, N. L. F., Aslam, R., Bhartia, B., Callister, M. E., Kennedy, M. P., ... & Neal, R. D. (2021). Estimating lung cancer risk from chest X-ray and symptoms: a prospective cohort study. *British Journal of General Practice*, 71(705), e280-e286.
14. Chabowski, M., Polański, J., Mazur, G., Janczak, D., & Rosińczuk, J. (2017). Sociodemographic and clinical determinants of quality of life of patients with non-small cell lung cancer. *Clinical management of pulmonary disorders and diseases*, 1-10.
15. Yamaoka, T., Tsurutani, J., Sagara, H., & Ohmori, T. (2020). HER2-D16 oncogenic driver mutation confers osimertinib resistance in EGFR mutation-positive non-small cell lung cancer. *Translational Lung Cancer Research*, 9(5), 2178.
16. Bylicki, O., Didier, M., Riviere, F., Margery, J., Grassin, F., & Chouaid, C. (2019). Lung cancer and end-of-life care: a

- systematic review and thematic synthesis of aggressive inpatient care. *BMJ Supportive & Palliative Care*, 9(4), 413-424.
17. Denis, F., Lethrosne, C., Pourel, N., Molinier, O., Pointreau, Y., Domont, J., ... & Letellier, C. (2017). Randomized trial comparing a web-mediated follow-up with routine surveillance in lung cancer patients. *JNCI: Journal of the National Cancer Institute*, 109(9), djx029.
 18. Hollings, N., & Shaw, P. (2002). Diagnostic imaging of lung cancer. *European Respiratory Journal*, 19(4), 722-742.
 19. Bradley, S. H., Abraham, S., Callister, M. E., Grice, A., Hamilton, W. T., Lopez, R. R., ... & Neal, R. D. (2019). Sensitivity of chest X-ray for detecting lung cancer in people presenting with symptoms: a systematic review. *British Journal of General Practice*, 69(689), e827-e835.
 20. Jalal, A. H., Sikder, A. K., Alam, F., Samin, S., Rahman, S. S., Khan, M. M. A., & Siddiquee, M. R. (2021). Early diagnosis with alternative approaches: innovation in lung cancer care. *Shanghai Chest*, 5.
 21. Ciofiac M, et al. The role of contrast-enhanced computed tomography in the diagnosis of lung cancer. *Pathol Oncol Res.* (2024) 30(1):123-130. doi: 10.1007/s12253-023-01000-z.
 22. Zhu A, et al. PET/CT in lung cancer: new perspectives and challenges. *Med Oncol.* (2022) 39(3):36. doi: 10.1007/s12032-022-01619-4.
 23. Mostafavi, M., & Shabani, M. (2024). A COMPREHENSIVE REVIEW OF INTEGRATING AI AND MEDICAL IMAGING IN LUNG CANCER DIAGNOSIS. *Journal of Population Therapeutics and Clinical Pharmacology*, 31(3), 473-485.
 24. American Cancer Society. Lung Cancer Survival Rates | 5-Year Survival Rates for Lung Cancer. Available at:. Accessed May 27, 2024.
 25. de Jager E, et al. Circulating tumor DNA as a biomarker for lung cancer detection and treatment monitoring. *Pathol Oncol Res.* (2024) 30(3):235-246.
 26. Shiau CJ, Tsao AS. Personalized therapy in lung cancer: molecular diagnostics and targeted therapies. *Pathol Oncol Res.* (2024) 30(4):567-578.
 27. Mazières, J., Zalcman, G., Crinò, L., Biondani, P., Barlesi, F., Filleron, T., ... & Gautschi, O. (2015). Crizotinib therapy for advanced lung adenocarcinoma and a ROS1 rearrangement: results from the EUROS1 cohort. *Journal of clinical oncology*, 33(9), 992-999.
 28. Tomasini, P., Egea, J., Souquet-Bressand, M., Greillier, L., & Barlesi, F. (2019). Alectinib in the treatment of ALK-positive metastatic non-small cell lung cancer: clinical trial evidence and experience with a focus on brain metastases. *Therapeutic Advances in Respiratory Disease*, 13, 1753466619831906.
 29. Aguiar Jr, P. N., De Mello, R. A., Hall, P., Tadokoro, H., & Lima Lopes, G. D. (2017). PD-L1 expression as a predictive biomarker in advanced non-small-cell lung cancer: updated survival data. *Immunotherapy*, 9(6), 499-506.
 30. Ren, F., Fei, Q., Qiu, K., Zhang, Y., Zhang, H., & Sun, L. (2024). Liquid biopsy techniques and lung cancer: diagnosis, monitoring and evaluation. *Journal of Experimental & Clinical Cancer Research*, 43(1), 96.
 31. Aguiar Jr, P. N., De Mello, R. A., Hall, P., Tadokoro, H., & Lima Lopes, G. D. (2017). PD-L1 expression as a predictive biomarker in advanced non-small-cell lung cancer: updated survival data. *Immunotherapy*, 9(6), 499-506.
 32. Ren, F., Fei, Q., Qiu, K., Zhang, Y., Zhang, H., & Sun, L. (2024). Liquid biopsy techniques and lung cancer: diagnosis, monitoring and evaluation. *Journal of Experimental & Clinical Cancer Research*, 43(1), 96.
 33. Goksel, T., Özgür, S., Vardarlı, A. T., Koç, A., Karakuş, H. S., Özdemir, T. R., ... & Basbınar, Y. (2024). Prognostic and predictive role of liquid biopsy in lung cancer patients. *Frontiers in Oncology*, 13, 1275525.
 34. Casagrande, G. M. S., Silva, M. D. O., Reis, R. M., & Leal, L. F. (2023). Liquid biopsy for lung cancer: up-to-date and perspectives for screening programs. *International Journal of Molecular Sciences*, 24(3), 2505.
 35. Rulle, U., Tsourti, Z., Casanova, R., Deml, K. F., Verbeken, E., Thunnissen, E., ... & Soltermann, A. (2018). Computer-based intensity measurement assists pathologists in scoring phosphatase and tensin homolog immunohistochemistry—clinical associations in NSCLC patients of the European Thoracic Oncology Platform Lungscape Cohort. *Journal of Thoracic Oncology*, 13(12), 1851-1863.
 36. Yamada, K., Kadota, K., Fujimoto, S., Yoshida, C., Ibuki, E., Ishikawa, R., ... & Yajima, T. (2023). MMP-7 expression is associated with a higher rate of tumor spread through air spaces in resected lung adenocarcinomas. *Lung Cancer*, 175, 125-130.
 37. Ferreira-Gonzalez A, et al. Next-generation sequencing for lung cancer: new developments and clinical applications. *Pathol Oncol Res.* (2024) 30(3):345-356. doi: 10.1007/s12253-023-01122-9.
 38. Liu, T., Peng, X., Geng, Y., Song, C., Zhou, Z., & Huang, Y. (2024). Frailty and prognosis in lung cancer: systematic review and meta-analysis. *BMJ Supportive & Palliative Care*, 14(2), 121-131.
 39. Chen, M., Hui, S., Yu, H., Huang, Y., Yang, H., Yang, L., ... & Wang, S. (2024). Knowledge, attitudes, and current practices toward lung cancer palliative care management in China: a national survey. *Frontiers in Oncology*, 14, 1382496.
 40. American Cancer Society. Palliative Procedures for Small Cell Lung Cancer. (2024).
 41. Pointon, S., Collins, A., & Philip, J. (2024). Introducing palliative care in advanced cancer: a systematic review. *BMJ Supportive & Palliative Care*.
 42. Single Care Team. Lung cancer statistics 2024. SingleCare. (2024).
 43. Gowing G. Boost to palliative care may be needed for cancer patients. Medical Xpress. (2024).
 44. Bylicki O, Didier M, Riviere F, Margery J, Grassin F, Chouaid C. Lung cancer and end-of-life care: a systematic review and thematic synthesis. *BMJ Support Palliat Care.* (2024).
 45. Wańczura, P., Aebisher, D., Wiśniowski, M., Kos, M., Bukowski, H., Hołownia-Voloskova, M., & Przybylski, A. (2024). Telemedical Intervention and Its Effect on Quality of

- Life in Chronic Heart Failure Patients: The Results from the Telemedicine and e-Health Solution Pilot Program. *Journal of Clinical Medicine*, 13(9), 2604.
46. Chowdhury, I. H., Rahman, M. S., Chowdhury, M. N. K., Afroze, Y. J., Tabassum, M., Marnush, M., & Zerín, N. (2024). Mirtazapine versus megestrol acetate in treatment of anorexia-cachexia in advanced cancer patients: a randomized, double-blind trial. *Japanese Journal of Clinical Oncology*, 54(5), 530-536.
 47. Nekhlyudov, L., Walker, R., Ziebell, R., Rabin, B., Nutt, S., & Chubak, J. (2016). Cancer survivors' experiences with insurance, finances, and employment: results from a multisite study. *Journal of Cancer Survivorship*, 10, 1104-1111.
 48. Chair, S. Y., Cheng, H. Y., Chew, H. S. J., Zang, Y. L., Siow, E. K., & Cao, X. (2020). Leisure-Time Physical Activity and Depressive Symptoms Among Patients With Coronary Heart Disease: The Mediating Role of Physical Activity Self-Efficacy. *Worldviews on Evidence-Based Nursing*, 17(2), 144-150.
 49. Weaver, M. S., Wiener, L., Jacobs, S., Bell, C. J., Madrigal, V., Mooney-Doyle, K., & Lyon, M. E. (2021). Adolescent advance care planning: Safe, worthwhile, and caring. *JOURNAL OF PALLIATIVE MEDICINE*, 24(1), 8-10.
 50. Chen, M., Hui, S., Yu, H., Huang, Y., Yang, H., Yang, L., ... & Wang, S. (2024). Knowledge, attitudes, and current practices toward lung cancer palliative care management in China: a national survey. *Frontiers in Oncology*, 14, 1382496.
 51. Bennardi, M., Diviani, N., Gamondi, C., Stüssi, G., Saletti, P., Cinesi, I., & Rubinelli, S. (2020). Palliative care utilization in oncology and hemato-oncology: a systematic review of cognitive barriers and facilitators from the perspective of healthcare professionals, adult patients, and their families. *BMC palliative care*, 19, 1-17.
 52. Sampaio, S. G. D. S. M., Costa, M. F. F. D., Bilobran, M. A., Muniz, A. H. R., Chelles, P. A., Souza, J. W. P. S., & de Oliveira, L. C. (2024). Pain management effectiveness in advanced cancer: palliative care unit inpatient study. *BMJ Supportive & Palliative Care*.
 53. Mori, M., Miwa, S., Ikari, T., Kako, J., Hasegawa, T., Matsunuma, R., ... & Yamaguchi, T. (2023). Current Management Options for Dyspnea in Cancer Patients. *Current Treatment Options in Oncology*, 24(6), 565-579.
 54. Bertolaccini, L., Casiraghi, M., Uslenghi, C., Maiorca, S., & Spaggiari, L. (2024). Recent advances in lung cancer research: unravelling the future of treatment. *Updates in Surgery*, 1-12.
 55. Shin, J. W., Lee, B. J., Chung, S., Lee, K. S., Kim, K. L., & Hwang, J. I. (2024). Understanding experiences of cancer-related fatigue in patients with lung cancer after their cancer treatment: a qualitative content analysis. *Quality of Life Research*, 33(4), 975-987.
 56. Michel, C., Seipp, H., Kuss, K., Hach, M., Kussin, A., Riera-Knorrenschild, J., & Bösner, S. (2023). Key aspects of psychosocial needs in palliative care—a qualitative analysis within the setting of a palliative care unit in comparison with specialised palliative home care. *BMC palliative care*, 22(1), 100.
 57. Pakenham, K., & Martin, C. L. (2022). Psychosocial palliative care: Patients' preferred intervention medium, target domains, and well-being priorities. *Palliative & Supportive Care*, 1-9.
 58. Urbano Chamorro, I., & de la Torre-Montero, J. C. (2024). Cancer-related fatigue and activities of daily living: lessons learned from the COVID-19 pandemic. *BMC Palliative Care*, 23(1), 110.
 59. Zeng, K., Zhong, Y., Chen, X., & Zhang, L. (2024). Perceived communication efficacy and unmet needs for chemotherapy-associated symptom management in patients with lung and colorectal cancer: a cross-sectional study. *BMC Palliative Care*, 23(1), 71.
 60. Wilkin, K., Fang, M. L., & Sixsmith, J. (2024). Implementing advance care planning in palliative and end of life care: a scoping review of community nursing perspectives. *BMC geriatrics*, 24(1), 294.
 61. Jaschke, J., Schnakenberg, R., Silies, K., Berg, A., Kirchner, Ä., Hoffmann, F., ... & Köberlein-Neu, J. (2024). Measuring patients' medical treatment preferences in advance care planning: development and validation of the Treat-Me-ACP instrument—a secondary analysis of a cluster-randomized controlled trial. *BMC Palliative Care*, 23(1), 77.
 62. Patel, M. N., Nicolla, J. M., Friedman, F. A., Ritz, M. R., & Kamal, A. H. (2020). Hospice use among patients with cancer: trends, barriers, and future directions. *JCO Oncology Practice*, 16(12), 803-809.
 63. Sharafi, S., Ziaee, A., & Dahmardeh, H. (2023). What are the outcomes of hospice care for cancer patients? A systematic review. *Supportive Care in Cancer*, 31(1), 64.
 64. Harrop, E., Scott, H., Sivell, S., Seddon, K., Fitzgibbon, J., Morgan, F., ... & Longo, M. (2020). Coping and wellbeing in bereavement: two core outcomes for evaluating bereavement support in palliative care. *BMC Palliative Care*, 19, 1-15.
 65. Pornrattanakavee, P., Srichan, T., Seetalarom, K., Saichaemchan, S., Oer-Areemitr, N., & Prasongsook, N. (2022). Impact of interprofessional collaborative practice in palliative care on outcomes for advanced cancer inpatients in a resource-limited setting. *BMC Palliative Care*, 21(1), 229.
 66. Mathews, J., Hannon, B., & Zimmermann, C. (2021). Models of integration of specialized palliative care with oncology. *Current treatment options in oncology*, 22, 1-18.
 67. Scott B. Multidisciplinary Team Approach in Cancer Care: A Review of The Latest Advancements. *Eur Med J Oncol*. (2021). Available at:
 68. Temel, J. S., Petrillo, L. A., & Greer, J. A. (2022). Patient-centered palliative care for patients with advanced lung cancer. *Journal of Clinical Oncology*, 40(6), 626-634.
 69. Yip Y-C, Yip K-H, Tsui W-K. Palliative Care for Patients with Lung Cancer: A Review of the Current Developments in the Field and Perspectives on the Implementation of Care. In: Hassan BAR, editor. *Supportive and Palliative Care and Quality of Life in Oncology*. (2022).
 70. Elshamy, K. (2022). Challenges Facing Lung Cancer Patients Who Need Palliative and Supportive Care during COVID-19 Pandemic. *Am J Clin Case Rep*, 3(3), 1065.
 71. McLouth, L. E., Borger, T., Bursac, V., Hoerger, M., McFarlin,

- J., Shelton, S., ... & Schoenberg, N. E. (2023). Palliative care use and utilization determinants among patients treated for advanced stage lung cancer care in the community and academic medical setting. *Supportive Care in Cancer*, 31(3), 190.
72. Chang, J., Han, K. T., Medina, M., & Kim, S. J. (2022). Palliative care and healthcare utilization among deceased metastatic lung cancer patients in US hospitals. *BMC Palliative Care*, 21(1), 136.
73. Ge, L., Wang, Q., He, Y., Wu, D., Zhou, Q., Xu, N., ... & Zhang, H. (2022). Acupuncture for cancer pain: an evidence-based clinical practice guideline. *Chinese medicine*, 17, 1-12.
74. Ekberg, S., Parry, R., Land, V., Ekberg, K., Pino, M., Antaki, C., ... & Whittaker, B. (2021). Communicating with patients and families about illness progression and end of life: a review of studies using direct observation of clinical practice. *BMC Palliative Care*, 20, 1-12.
75. Sun, L., Bleiberg, B., Hwang, W. T., Marmarelis, M. E., Langer, C. J., Singh, A., ... & Aggarwal, C. (2023). Association between duration of immunotherapy and overall survival in advanced non-small cell lung cancer. *JAMA oncology*, 9(8), 1075-1082.
76. Ghoshal, A., Mathew, A., & Rajagopal, M. R. (2024). Dying with dignity in India: What is new in 2023?. *BMJ Supportive & Palliative Care*, 14(e1), e293-e295.

Copyright: ©2024 Xiao Qi, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.