

Research Progress in Advance Care Planning (ACP) for Lung Cancer Patients

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Abstract This paper systematically reviews the research progress of Advance Care Planning (ACP) in the field of lung cancer, and discusses its implementation status, key influencing factors and future development direction, including deepening of theoretical research, innovation of practice mode, optimization of policy support and cultural adaptation research.

Key words Lung cancer, Advance Care Planning (ACP), Research progress

1 Introduction

At present, lung cancer exhibits the highest cancer mortality rate globally, and its treatment paradigm is shifting from a core focus on prolonging survival towards enhancing quality of life. According to 2022 World Health Organization (WHO) data, approximately 2.2 million new lung cancer cases and 1.8 million deaths occur worldwide annually, with about 75% of patients diagnosed at an advanced stage^[1]. During the terminal phase of the disease, patients frequently confront the dual challenge of treatment decision-making and diminished quality of life. Advance Care Planning (ACP), as a prospective care model integrating medical, ethical, and legal considerations, is progressively emerging as a critical strategy for end-of-life management in lung cancer patients^[2]. The core of ACP involves establishing a care plan aligned with the patient's self-expressed healthcare preferences, encompassing medical decision-making authorization, hospice care choices, and palliative care options^[3]. Its implementation not only helps reduce unnecessary therapeutic interventions but also enhances the sense of dignity and personal control for patients nearing the end of life. Nevertheless, promoting ACP among lung cancer patients continues to encounter multiple challenges, including cultural differences, insufficient medical system support, and patient cognitive biases. This paper will conduct a systematic review of ACP research progress within the lung cancer domain, examining its current implementation status, key influencing factors, and future directions for development.

2 The theoretical basis and core elements of ACP

2.1 Definition of the concept The concept of ACP originated in the United States during the 1970s, initially focusing on the

pre-authorization of medical decisions for elderly patients. With the evolution of medical ethics, the connotation of ACP has broadened to encompass a comprehensive care framework covering medical decision-making, the selection of life-sustaining treatments, and hospice care planning^[4]. As defined by the American Medical Association (AMA), ACP comprises three core elements: the expression of specific medical treatment preferences (such as consent for or refusal of interventions like intubation and mechanical ventilation), the appointment of a healthcare agent for medical decision-making, and the description of personal care preferences (including aspects like pain management and religious or spiritual rituals).

2.2 Theoretical framework The implementation of ACP is based on several theoretical models^[5], with Autonomy Theory and Preventive Care Theory constituting the core. Autonomy Theory emphasizes the patient's dominant role in medical decision-making and requires the healthcare team to respect the patient's values and preferences; Preventive Care Theory focuses on reducing late-stage medical disputes and enhancing the quality of care through proactive planning. Furthermore, Social Cognitive Theory plays a significant role in advancing ACP, emphasizing the enhancement of patients' willingness to participate through education, demonstration, and social support.

2.3 Clinical value Studies^[6] have demonstrated that implementing ACP yields multiple clinical benefits: reducing overtreatment risks, a meta-analysis of 12 RCTs revealed a 32% decrease in invasive treatment rates among ACP participants ($OR = 0.68$, 95% CI 0.56–0.83); enhancing end-of-life comfort, a 2021 JAMA Oncology study found 27% higher pain control satisfaction in ACP recipients; and alleviating family caregivers' psychological burden, American Cancer Society (ACS) data indicated 41% lower anxiety scores among families engaged in ACP.

3 Analysis of implementation of ACP in patients with lung cancer

3.1 Implementation status in the world According to the 2022 *Global Cancer Care Status Report*^[7], the implementation

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rates of ACP among lung cancer patients exhibit significant regional variations; North America demonstrates the highest rate at 68%, where the United States has established legal safeguards through the *Patient Self – Determination Act*; Europe reports approximately 52% implementation, with the United Kingdom integrating ACP into standard lung cancer treatment pathways via NICE guidelines; Asia shows the lowest adoption at < 30%, while in China, only 12% of oncologists have received ACP training. These disparities are largely attributable to differences in cultural perspectives, legal frameworks, and medical resource allocation.

3.2 Implementation status in China In China, the implementation of ACP remains in the exploratory phase. According to a 2021 survey^[8], merely 23% of tertiary hospitals have established specialized ACP working groups, while 86% of healthcare workers demonstrate only foundational-level awareness of ACP. Among lung cancer patients, the implementation rate falls below 15%. Key barriers include: cultural reluctance rooted in traditional taboos surrounding death, leading patients to avoid end-of-life discussions; systemic deficiencies within healthcare infrastructure, *e.g.*, unclear legal validity of medical decision-making authorizations; and inadequate professional training, a 2020 study^[9] revealed that only 12% of oncology nurses were proficient in ACP communication skills.

3.3 Comparison of implementation modes Significant variations exist in ACP implementation models across countries/regions. The United States employs a legal-institutional integration model, establishing ACP's legal status through the *Health Insurance Portability and Accountability Act (HIPAA)* and requiring systematic ACP assessment by medical teams during patient admissions^[10]. Europe utilizes a multidisciplinary collaboration approach, where Germany coordinates ACP working groups comprising physicians, social workers, and ethics committees, while the UK integrates ACP into its national cancer care strategy via NICE guidelines^[11]. Asian nations predominantly adopt progressive implementation frameworks: Japan regulates ACP through the *Guidelines for Life – Sustaining Treatment*, and China is conducting pilot programs for an innovative "hospice care-ACP integration" service model^[12].

4 Key factors influencing the implementation of ACP

4.1 Factors related to patients Individual patient characteristics significantly influence ACP implementation. Primarily, health literacy constitutes a core determinant of patient engagement willingness. Studies demonstrate^[13] that for every 10% increase in ACP awareness, implementation rates rise substantially by 8.2% ($r = 0.73$, $p < 0.01$), indicating that enhanced comprehension effectively mitigates patients' apprehensions toward ACP, thereby increasing participation. Furthermore, health literacy correlates strongly with educational attainment; patients with higher educa-

tion exhibit significantly greater ACP awareness than less-educated counterparts ($OR = 1.62$, 95% CI 1.28 – 2.05)^[14]. Consequently, elevating patient ACP awareness necessitates multifaceted health education interventions, including tailored patient education curricula, accessible informational materials, and digital dissemination tools (*e.g.*, mobile applications). Secondly, disease progression stage represents a critical variable affecting ACP implementation intent. Studies^[15] have demonstrated that advanced-stage lung cancer patients exhibit significantly higher ACP engagement willingness than early-stage counterparts ($OR = 2.45$, 95% CI 1.89 – 3.18), a phenomenon potentially attributable to disease-progression-induced shifts in health perspectives. During initial diagnosis, patients prioritize therapeutic efficacy and survival extension over end-of-life considerations; as the disease advances, heightened prognostic awareness increases their inclination to formalize medical preferences through ACP. Furthermore, cultural background substantially influences ACP implementation; East Asian patients frequently demonstrate death avoidance tendencies, whereas European/American populations typically engage in proactive planning, divergences rooted in cultural values, religious beliefs, and social norms. Illustratively, a China-based lung cancer survey^[16] revealed merely 15% of patients would discuss mortality with physicians, while 62% of families perceived death-related conversations as detrimental. Conversely, Western cultures emphasize personal autonomy, with ACP widely accepted as integral to medical decision-making. Notably, cultural influence is not absolute but dynamically moderated by socioeconomic development levels, healthcare system maturity, and educational attainment.

4.2 Medical team factor The professional competencies and collaborative models of healthcare teams critically influence ACP implementation. Implementing professional training is a pivotal factor for enhancing ACP adoption rates; studies^[17] demonstrate that physicians receiving specialized ACP training achieve 41% higher patient implementation rates compared to untrained counterparts ($p < 0.001$), indicating that systematic education significantly strengthens clinical teams' comprehension and application capabilities, thereby facilitating patient engagement. Furthermore, communication skill refinement proves equally vital; employing structured dialogue tools such as the Dialogue Guide to Advance Care Planning effectively increases participation, a randomized controlled trial^[18] confirmed 32% greater patient acceptance when using standardized communication tools ($OR = 1.32$, 95% CI 1.15 – 1.52 compared with the control group). Finally, multidisciplinary collaboration markedly elevates ACP success rates, with research indicating a 2.3-fold increase in implementation success when teams integrate physicians, social workers, and psychologists. By consolidating cross-disciplinary expertise, this model comprehensively addresses patients' multidimensional needs; social workers mediate family-care coordination while psychologists alleviate patient anxiety, collectively optimizing ACP outcomes.

4.3 Institutional and policy factors Institutional and policy support serves as a crucial guarantee for advancing ACP. Legal protection plays a significant role in promoting ACP implementation; notably, the implementation rate in countries with an ACP legal framework has increased 1.8-fold^[19]. For instance, the enactment of the *Patient Self-Determination Act* in the United States significantly boosted the prevalence of ACP, while the United Kingdom's National Institute for Health and Care Excellence (NICE) Guidelines further promoted its adoption by integrating ACP into the lung cancer treatment pathway. The optimization of payment systems is also vital. In regions where ACP is included within medical insurance reimbursement coverage, the implementation rate has risen by 28%. Japan exemplifies this, where health insurance coverage for ACP-related services increased the patient implementation rate from 12% in 2010 to 38% in 2022. Furthermore, establishing quality supervision mechanisms can effectively enhance patient satisfaction. Studies indicate^[20] that institutions implementing an ACP quality assessment system increase patient satisfaction by 34%. Germany, for example, has established standardized assessment tools to ensure the standardization and consistency of ACP delivery, thereby strengthening patients' trust in end-of-life care. The synergistic effect of these systems and policies provides a solid foundation for promoting ACP.

5 Research progress of ACP interventions

5.1 Structural intervention mode

5.1.1 Standardized assessment tools. These tools include the Advance Care Planning Questionnaire (ACPQ) and the Decision-Making Assessment Inventory (DMAI), are widely used for assessing patient readiness in ACP.

5.1.2 Multi-phase Intervention Process. Adopting the five-stage model of "screening-assessment-planning-implementation-follow-up" significantly increases implementation rates.

5.1.3 Application of digital tools. Mobile medical APPs (such as "Life Plan") enhance patient participation through scenario simulation, and a study shows that patients using APPs are 53% more willing to implement.

5.2 Individualized intervention strategies The intervention framework employs three core strategies: (i) individualized plans based on patient values utilize Value Clarification Interviews (VCI) to identify core preferences, increasing patient satisfaction by 42%^[21]; (ii) culturally adapted interventions feature the Family-Engaged ACP model for East Asian populations, enhancing implementation adherence through family-shared decision making; and (iii) evidence-based decision support systems integrate clinical guidelines with patient preference databases, improving treatment option alignment with patient values by 67%.

5.3 Multidisciplinary collaboration mode Medical team collaboration: The triangular collaboration model of doctor-social worker-psychologist increased the implementation rate of ACP by

3.2 times^[22]. Family participation mechanism: establish a "family decision support group" to enhance the cooperation of patients' family members. Ethics committee intervention: to provide ethical consultation in complex decision-making and reduce the incidence of medical disputes.

6 Ethical and legal challenges in ACP implementation

6.1 Ethical dilemmas Balancing autonomy and medical intervention: how to strike a balance between respecting patient wishes and ensuring medical safety; information asymmetry risks: patients may make irrational decisions due to insufficient information; cultural conflicts: the conflict between religious beliefs and medical decision-making, such as certain groups refusing ventilators.

6.2 Legal issues Legal effect determination: the legal validity of medical decision-making authorization varies across jurisdictions; Liability Definition: Clarification of liability attribution regarding medical malpractice during ACP implementation; Privacy Protection: Patients' advance care preferences must comply with data protection regulations in storage and usage.

6.3 Solutions It is necessary to establish the ethics review committee, formulate the implementation guidelines of ACP, improve the legal framework, clarify the legal status and implementation norms of ACP, and develop a standardized electronic medical willingness storage system to ensure data security.

7 Future research directions

7.1 Theoretical research deepening It is necessary to construct the theoretical model of ACP for lung cancer patients, integrate the characteristics of the disease and the needs of patients, develop the decision support system based on artificial intelligence, improve the personalized level of ACP, explore the integration path of ACP and precision medicine, and realize the scientific treatment decision-making.

7.2 Innovation of practice mode It is recommended to develop a "Mobile Health + ACP" model to expand service accessibility through tele-health technology; establish an ACP implementation quality evaluation system with standardized assessment tools; explore the integration of community healthcare and ACP to enhance service capabilities of primary care institutions.

7.3 Policy support optimization It is imperative to promote the inclusion of ACP in health insurance payment systems by establishing incentive mechanisms; enhance legal safeguards through defining the legal validity of medical decision-making authorization; strengthen inter-departmental collaboration to build a coordinated mechanism spanning medical, legal, and ethical domains.

7.4 Cultural adaptation research Future research directions may include: conducting cross-cultural ACP implementation studies to develop culturally adapted interventions; examining variations in patient decision-making patterns across diverse cultural

contexts; establishing cultural sensitivity training systems to foster cross-cultural communication competencies among healthcare providers.

8 Conclusions

ACP constitutes a critical strategy for enhancing end-of-life care quality in lung cancer patients, with its implementation efficacy influenced by multidimensional factors. Despite globally increasing adoption rates, cultural disparities, institutional barriers, and uneven distribution of healthcare resources continue to impede its widespread implementation. Future research should prioritize: (i) theoretical model innovation, (ii) practice paradigm optimization, and (iii) policy support enhancement, thereby constructing an ACP system tailored to lung cancer patients' needs through multi-disciplinary collaboration and technological innovation. As healthcare transitions toward patient-centered models, ACP dissemination will crucially support improving patients' quality of life, alleviating family caregiving burdens, and optimizing healthcare resource allocation.

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