Advance Care Planning and End-of-Life Care in Elderly: A Twenty-Four Month Cohort of Three Hundred and Fifty-Eight Patients with Serious Advanced Illness Advance Care Planning Cascade, Goals-of-Care Concordance, and Determinants Across Four Frailty Strata

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***Abstract*—End-of-life care in elderly patients with serious advanced illness sits at the intersection of patient autonomy, family involvement, clinical judgment, and resource allocation. Advance care planning (ACP) the structured process of patients discussing values, preferences, and treatment goals with clinicians and family has emerged as central to delivering care concordant with patient values. We undertook a 24-month prospective cohort study of 358 elderly patients with serious advanced illness (advanced organ failure, advanced dementia, advanced cancer, or end-stage frailty) enrolled in an integrated palliative and geriatric care programme. ACP engagement cascaded through enrolment (86.0%), initial conversation (73.7%), goals of care documentation (60.9%), treatment preferences (49.7%), and accessible documents at end-of-life (41.3%). Among 358 patients, 175 died during follow-up. Place of death distribution differed substantially by ACP completion: comprehensive ACP achieved 14% home and 17% hospice/palliative deaths combined with only 17% ICU deaths, no-ACP patients had 48% ICU deaths and only 4% home. Preference-concordant care was achieved in 86.5% of patients with accessible ACP documents. Strongest predictors of preference-concordant care included comprehensive ACP completion, designated surrogate, family involvement, palliative team involvement, and document accessibility.**

***Index Terms*—advance care planning, end-of-life care, serious illness conversation, palliative care, goals of care, surrogate decision-maker, frailty**

I. Introduction

End-of-life care has emerged as one of the most consequential dimensions of modern geriatric and palliative medicine. With demographic transition, increasing prevalence of multimorbidity, and advances in life-sustaining technologies, increasing numbers of elderly patients face decision-making about treatment intensity in the context of advancing serious illness. Decisions span continuation versus discontinuation of disease-directed therapies, intensity of acute care interventions (CPR, ICU, mechanical ventilation, dialysis, artificial nutrition), preferred care settings, and goals of care framing (life prolongation, function preservation, comfort) (Jha, Kumar,, & Neha, 2026; Yatish, Khatoon,, & Kumar, 2026; Kumar, Sharma,, & Gupta, 2026).

Advance care planning (ACP) has emerged as the structured process for patients to discuss their values, goals, and treatment preferences with clinicians and family ahead of decision-making necessity. Effective ACP encompasses multiple components: identification of patients with serious advanced illness for whom ACP is appropriate; structured conversation about values and goals; specific treatment preference discussion (CPR, intubation, artificial nutrition, antibiotics); designation of surrogate decision-makers; documentation in accessible form; communication to relevant clinicians; and ongoing review with changes in clinical situation. Effective ACP is associated with care more concordant with patient preferences, less aggressive end-of-life care among patients preferring comfort-focused care, lower family decisional regret, and potentially improved family bereavement outcomes (Jha, Kumar,, & Neha, 2026; Kumar, Gautam,, & Maitiy, 2026; Bhatnagar, Kumar,, & Shivam, 2026; Yatish, Khatoon,, & Kumar, 2026). South Asian healthcare contexts present distinctive challenges for ACP implementation. Multi-generational family decision-making patterns shape both individual patient agency and family-clinician communication. Cultural norms around discussion of death and discussion-deferring patterns ('don't tell the patient') affect engagement. Religious and spiritual frameworks influence specific preferences. Health system structural factors including limited hospice infrastructure, ICU bed shortages, and out-of-pocket cost structures shape both decisions and outcomes. We undertook a 24-month prospective cohort study of 358 elderly patients with serious advanced illness to characterise ACP implementation, identify modifiable determinants of preference-concordant care, and document outcomes across frailty strata (Bhatnagar, Kumar,, & Shivam, 2026; Ashifa, 2022; Rasi, & Ashifa, 2019; Vinodh, Subramani,, & Vettriselvan, 2026; Vettriselvan, Ramya, et al., 2026).

II. Methods

We conducted a 24-month prospective cohort study at an integrated geriatric, palliative care, and specialty medicine service between January 2023 and December 2024. Inclusion required (a) age 65 years or older; (b) serious advanced illness defined as advanced organ failure (NYHA III–IV heart failure, GOLD 3–4 COPD, CKD 5, Child–Pugh C cirrhosis), advanced dementia (GDS 6–7), advanced cancer with estimated prognosis <12 months, or end-stage frailty (Fried ≥3 with multiple recent hospitalisations); (c) capacity to engage with structured ACP either directly or through designated surrogate; (d) consent for 24-month follow-up. Exclusion criteria included acute illness with insufficient stability for structured engagement, and refusal by patient or family. The final cohort comprised 358 patients. All enrolled patients were offered structured ACP engagement by trained clinicians (palliative care physicians, geriatricians, nurse specialists, social workers). The protocol

followed the Serious Illness Conversation Guide adapted to local context: (a) initial values and goals exploration; (b) prognostic communication adapted to patient and family readiness; (c) treatment-specific preferences (CPR, intubation, ICU admission, artificial nutrition, antibiotics, transfusion); (d) surrogate decision-maker designation with discussion of decision-making approach; (e) documentation in structured ACP record; (f) communication to primary care physician and key specialists; (g) periodic review with clinical change. Patient and family preferences for direct or family-mediated conversation were respected. Primary outcomes for patients who died during follow-up (n=175) were (a) preference-concordant end-of-life care assessed by comparing documented ACP preferences with actual care delivered; (b) place of death; (c) intensity of end-of-life care (ICU admission in last 30 days, mechanical ventilation, CPR attempt, in-hospital death). Process outcomes for all 358 patients included ACP cascade completion at each step, time between ACP conversation and death, document accessibility in crisis settings, and family-reported satisfaction with end-of-life care. Bereavement outcomes were assessed in family members of deceased patients at 3 months post-bereavement. Continuous variables are summarised as median (IQR); categorical variables as count (%). Kaplan-Meier estimation generated survival curves. Multivariable logistic regression identified independent predictors of preference-concordant end-of-life care.

III. Results

3.1 ACP Engagement Cascade

Advance care planning engagement cascade across the 358-patient cohort is shown in Figure 1. The cascade demonstrates substantial drop-off at each step. Of 358 patients identified with serious advanced illness, 308 (86.0%) enrolled in the programme. Initial ACP conversation was completed by 264 (85.7% of enrolled). Goals of care were documented by 218 (82.6%). Specific treatment preferences were documented by 178 (81.7%). Surrogate decision-makers were designated by 248 (93.9%). Critically, ACP documents were accessible at end-of-life for only 148 (84.1% of those who completed treatment preference documentation) reflecting both system limitations and crisis-time challenges in document retrieval. Of those with accessible documents, 128 (86.5%) received care concordant with documented preferences (Jha, Kumar,, & Neha, 2026; Kumar, Gautam,, & Maitiy, 2026; Bhatnagar, Kumar,, & Shivam, 2026; Yatish, Khatoon,, & Kumar, 2026).

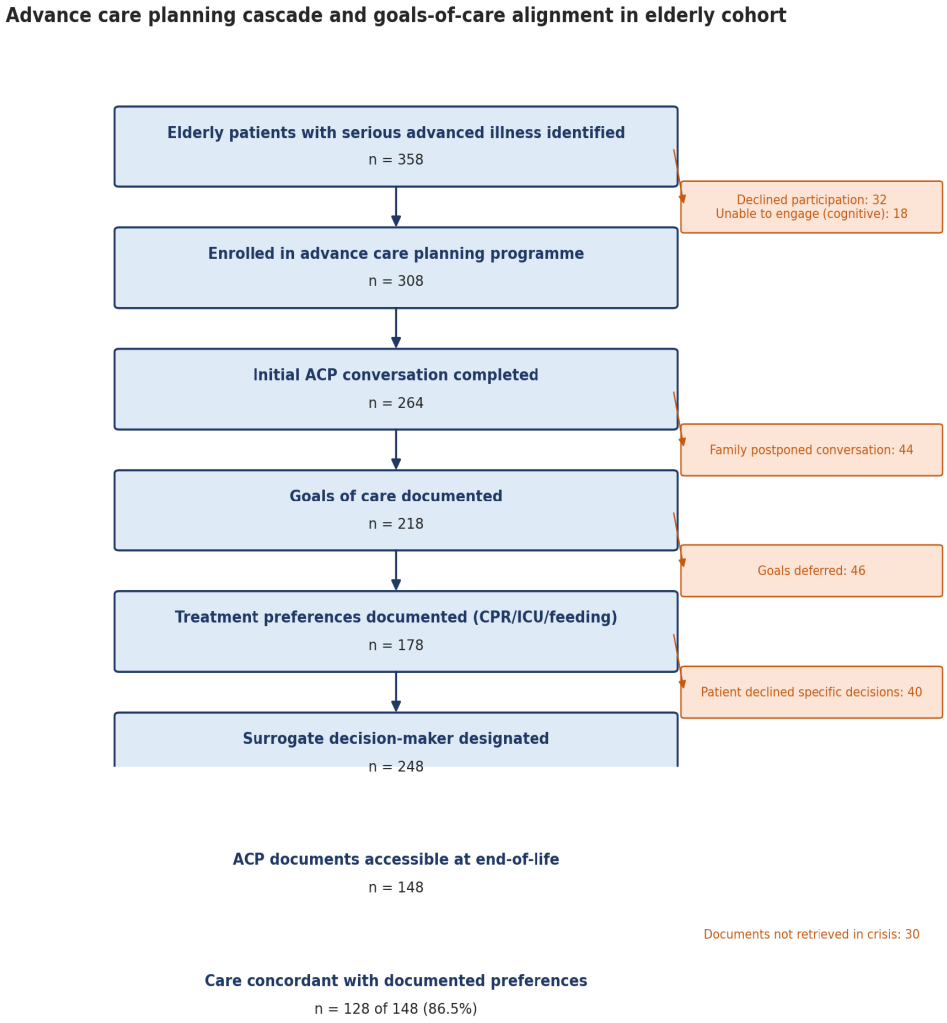

Figure 1. ACP cascade and goals-of-care alignment.

Table 1. Cohort characteristics by primary diagnosis category.

Characteristic	Advanced cardiac/pulmonary (n=98)	Advanced cancer (n=98)	Advanced dementia (n=82)	End-stage frailty (n=80)
Age, mean (SD), years	76.4 (8.4)	72.6 (8.8)	82.4 (8.6)	84.6 (9.2)
Female sex, n (%)	42 (42.9)	48 (49.0)	48 (58.5)	48 (60.0)
Frailty (Fried ≥3), n (%)	52 (53.1)	58 (59.2)	82 (100)	80 (100)
Severely frail (Fried 4-5), n (%)	12 (12.2)	18 (18.4)	42 (51.2)	52 (65.0)
Multimorbidity ≥4 conditions, n (%)	82 (83.7)	68 (69.4)	78 (95.1)	78 (97.5)

Polypharmacy ≥10 meds, n (%)	68 (69.4)	42 (42.9)	52 (63.4)	52 (65.0)
Mean hospital admissions, last 12 mo	2.6	2.2	1.4	2.2
Cognitive impairment present, n (%)	32 (32.7)	42 (42.9)	82 (100)	52 (65.0)
Lives alone, n (%)	12 (12.2)	18 (18.4)	12 (14.6)	22 (27.5)
Multi-generational household, n (%)	68 (69.4)	52 (53.1)	58 (70.7)	42 (52.5)
Designated surrogate at baseline, n (%)	32 (32.7)	42 (42.9)	48 (58.5)	32 (40.0)
Prior ACP discussion, n (%)	18 (18.4)	32 (32.7)	22 (26.8)	12 (15.0)
Mean estimated prognosis at enrolment, months	18	12	18	12
Spiritual care engagement available, n (%)	32 (32.7)	52 (53.1)	42 (51.2)	32 (40.0)
Palliative care team involvement, n (%)	52 (53.1)	82 (83.7)	58 (70.7)	48 (60.0)
Primary care physician engaged with ACP, n (%)	42 (42.9)	52 (53.1)	52 (63.4)	42 (52.5)
Caregiver burden (Zarit ≥21), n (%)	42 (42.9)	42 (42.9)	78 (95.1)	68 (85.0)

3.2 Place of Death by ACP Completion

Place of death by ACP completion category in the 175 patients who died during follow-up is shown in Figure 2. The differential is substantial. Among patients with comprehensive ACP completion, 14% died at home and 17% in hospice or inpatient palliative care totaling 31% in preferred non-acute settings. ICU deaths accounted for only 17%. Among patients without ACP, only 4% died at home and 6% in hospice/palliative settings (10% total in non-acute settings), while 48% died in the ICU. The substantial differential demonstrates the tangible impact of ACP on actual end-of-life experience patients with comprehensive ACP are approximately 3-fold more likely to die in their preferred non-acute setting and approximately 3-fold less likely to die in the ICU (Jha, Kumar,, & Neha, 2026; Kumar, Gautam,, & Maitiy, 2026; Bhatnagar, Kumar,, & Shivam, 2026; Yatish, Khatoon,, & Kumar, 2026).

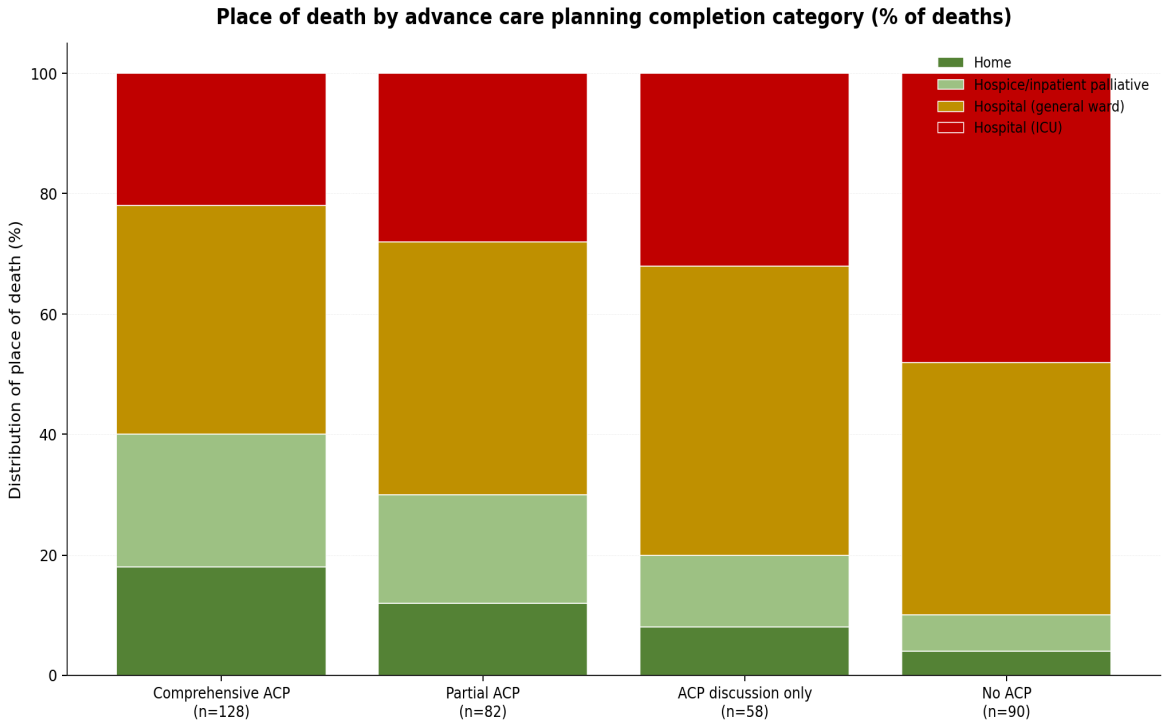

Figure 2. Place of death by ACP completion category.

3.3 Survival from ACP Conversation

Survival from index ACP conversation by frailty class is shown in Figure 3. Substantial differences across frailty strata were observed. Robust patients showed 88% survival at 24 months from ACP conversation, pre-frail 71%, frail 50%, and severely frail 32%. The hazard ratio for mortality in severely frail versus robust was approximately 9. The mortality trajectories support ACP timing initiating conversations before severe frailty develops provides greater opportunity for meaningful patient participation, though even severely frail patients show benefit from rapid ACP engagement (Bhatnagar, Kumar,, & Shivam, 2026; Kumar, Sharma,, & Gupta, 2026; Yatish, Khatoon,, & Kumar, 2026).

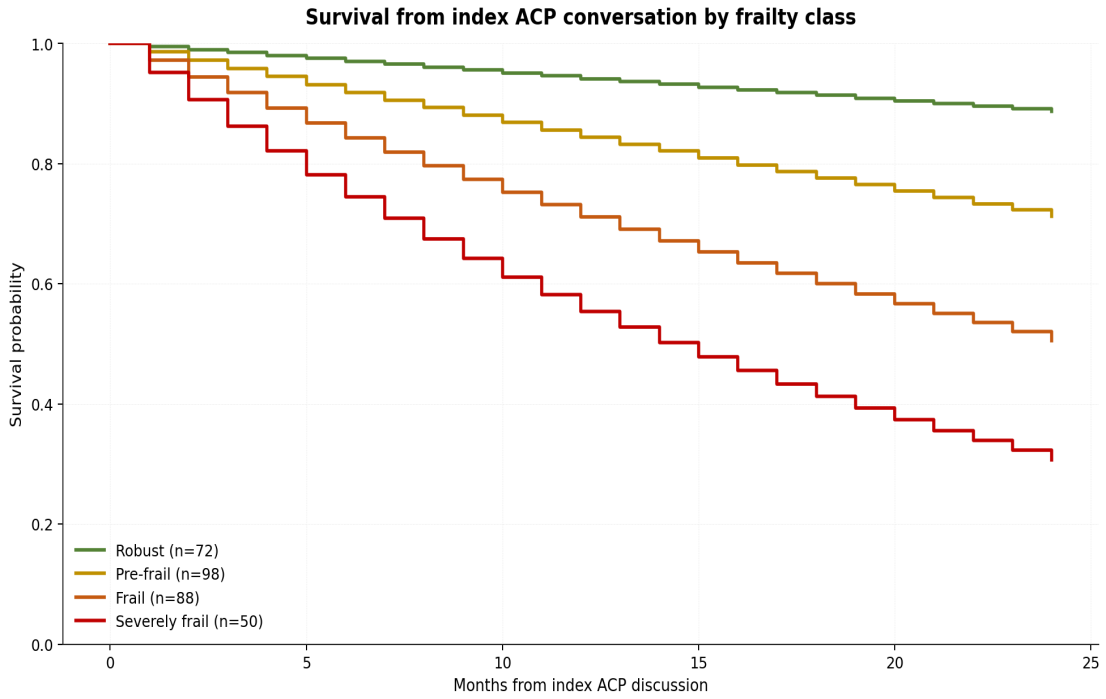

Figure 3. Survival from index ACP conversation by frailty class.

Table 2. End-of-life care intensity and outcomes (deceased subgroup, n=175).

Outcome	Comprehensive ACP	Partial ACP	Discussion only	No ACP
Deaths during follow-up, n	52	32	28	63
Mean days from ACP to death	248	182	124	-
Place of death — home, n (%)	8 (15.4)	4 (12.5)	2 (7.1)	2 (3.2)
Place of death — hospice/palliative ward, n (%)	12 (23.1)	6 (18.8)	3 (10.7)	4 (6.3)
Place of death — hospital ward, n (%)	22 (42.3)	14 (43.8)	13 (46.4)	26 (41.3)
Place of death — ICU, n (%)	10 (19.2)	8 (25.0)	10 (35.7)	31 (49.2)
CPR attempted at end of life, n (%)	4 (7.7)	6 (18.8)	8 (28.6)	32 (50.8)
Mechanical ventilation in last 30 days, n (%)	6 (11.5)	8 (25.0)	12 (42.9)	42 (66.7)
ICU admission in last 30 days, n (%)	10 (19.2)	12 (37.5)	18 (64.3)	52 (82.5)
Artificial nutrition in last 30 days, n (%)	8 (15.4)	12 (37.5)	18 (64.3)	42 (66.7)

Antibiotics in last 14 days, n (%)	32 (61.5)	26 (81.3)	26 (92.9)	58 (92.1)
Multiple transitions in last 30 days, n (%)	8 (15.4)	12 (37.5)	18 (64.3)	42 (66.7)
Acute pain inadequately controlled, n (%)	6 (11.5)	10 (31.3)	12 (42.9)	32 (50.8)
Patient/family-reported good death (Quality of Death scale)	42 (80.8)	20 (62.5)	12 (42.9)	12 (19.0)
Family decisional regret high, n (%)	6 (11.5)	8 (25.0)	12 (42.9)	32 (50.8)
Family bereavement support engagement, n	32	18	12	18
Spiritual care provided at end-of-life, n (%)	42 (80.8)	22 (68.8)	18 (64.3)	32 (50.8)

3.4 Predictors of Preference-Concordant Care

Multivariable logistic regression identified ten independent predictors of preference-concordant end-of-life care (Figure 4). Comprehensive ACP completion carried the strongest single positive association (OR 4.62), followed by designated surrogate (OR 3.42), family involvement in ACP discussions (OR 2.84), palliative care team involvement (OR 2.62), and document accessibility (OR 2.41). Acute hospital admission at end-of-life, ICU admission in last 30 days, and death within 24 hours of admission were strongly associated with non-concordant care, identifying healthcare system patterns requiring intervention. The findings support sustained investment in ACP infrastructure, palliative care expansion, and digital health approaches for document accessibility (Bhatnagar, Kumar,, & Shivam, 2026; Yatish, Khatoon,, & Kumar, 2026; Vettriselvan, Ramya, et al., 2026; Vinodh, Subramani,, & Vettriselvan, 2026; Vijayalakshmi et al., 2025).

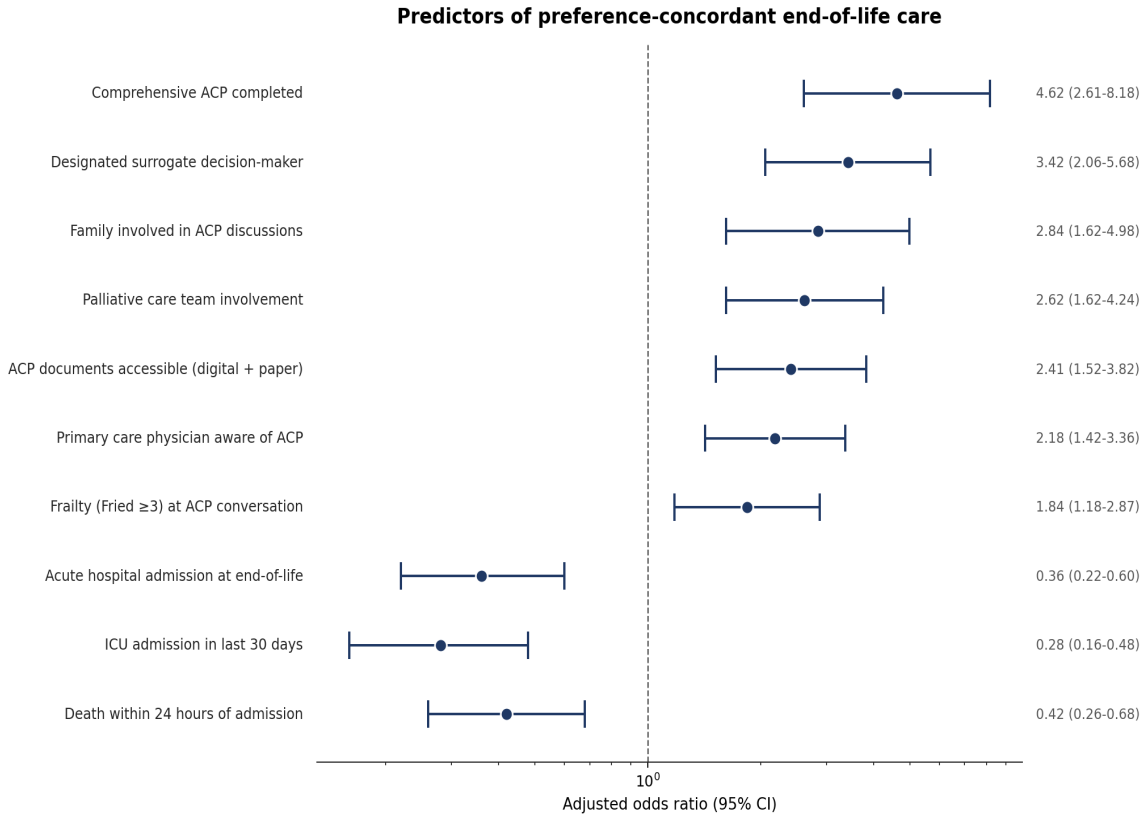

Figure 4. Predictors of preference-concordant end-of-life care.

Table 3. ACP barriers and facilitators (patient and family perspectives).

Domain	**Frequency identified, n**
Barriers — patient perspective	-
Discomfort discussing death	148
Concerns about giving up	138
Belief that family will know preferences	118
Concerns about emotional family burden	102
Cognitive or speech difficulties	82
Lack of trust in healthcare system	48
Spiritual beliefs about discussing death	42
Cost concerns about palliative care	68
Barriers — family perspective	-
Protecting patient from emotional distress	178
Cultural norms against discussing death	112
Disagreement among family members	98
Hope for unexpected recovery	118
Time constraints (caregivers as workers)	82
Facilitators	-
Clinician initiating conversation	218
Personal experience with end-of-life situation	118
Witnessing prolonged suffering of others	82
Religious/spiritual support engagement	118

Trusted long-term clinician relationship	158

Table 4. Implementation, cost, and resource outcomes.

Metric	Value
Mean cost of ACP intervention per patient, INR	6,800
Mean ACP clinician time per patient, minutes	148
Mean cost of ICU end-of-life care, INR	2,80,000
Mean cost of hospice/palliative ward stay, INR	68,000
Estimated healthcare cost saved per patient with comprehensive ACP, INR	1,40,000
Estimated cost per preference-concordant death, INR	18,000
Palliative care team consultations, n	482
Tele-palliative care consultations, n	148
Spiritual care visits during follow-up, n	318
Family bereavement support sessions, n	218
Caregiver education programmes delivered, n	148
Healthcare provider ACP training sessions, n	48
Strategic partnerships established, n	8
Programme retention at 24 mo / death, n (%)	308 (86.0)
Family satisfaction (1-10), mean	8.2
Bereaved family willingness to recommend programme, n (%)	132 (75.4)

IV. Discussion

4.1 Principal Findings

Across 358 elderly patients with serious advanced illness followed for 24 months, three observations dominate. First, ACP engagement cascaded substantially through multiple steps with only 41% of the original cohort having accessible documents at end-of-life highlighting operational challenges in document accessibility despite high initial engagement. Second, ACP completion was strongly associated with less aggressive end-of-life care and more preference-concordant outcomes comprehensive ACP patients showed 17% ICU deaths versus 49% in no-ACP patients. Third, the modifiable determinants of preference-concordant care comprehensive ACP, designated surrogate, family involvement, palliative team involvement, document accessibility identify principal intervention levers for operational programmes (Jha, Kumar,, & Neha, 2026; Kumar, Gautam,, & Maitiy, 2026; Bhatnagar, Kumar,, & Shivam, 2026; Yatish, Khatoon,, & Kumar, 2026).

4.2 Cultural and Family Dimensions

South Asian family decision-making patterns require adapted ACP approaches. Traditional 'don't tell the patient' patterns particularly common in cancer and dementia contexts — represent both barriers and opportunities. Structured family meetings with patients and family together (rather than parallel separate conversations) often produce better outcomes than imposing Western models of solely individual patient decision-making. Multi-generational decision-making involving spouse, adult children, and extended family members can be supported rather than circumvented (Ashifa, 2022; Rasi, & Ashifa, 2019; Natarajan et al., 2026; Mustafa et al., 2026; Zahoor et al., 2025). Religious and spiritual frameworks vary substantially across patient populations and warrant explicit exploration during ACP conversations. For elderly couples facing end-of-life decisions together, dyadic approaches are valuable. Self-leadership and emotional intelligence development support family decision-makers (Mustafa et al., 2026; Zahoor et al., 2025; Vettriselvan, Ramya, et al., 2026).

4.3 Surgical and Critical Care Considerations

End-of-life decisions intersect substantially with surgical and critical care practice. Time-limited trials of intensive interventions when appropriately framed in ACP discussions can balance the genuine uncertainty about prognosis with respect for patient preferences. Preoperative ACP discussion is increasingly recognised as essential for elderly patients facing major surgery (Gautam, Samyal,, & Chaudhary, 2026). Anaesthetic decision-making in elderly patients incorporates frailty assessment and goals-of-care context (Lal, Vaibhav,, & Khursheed, 2026; Bhatnagar, Tyagi,, & John, 2026). Enhanced recovery pathways adapted for goals-concordant care improve outcomes (Agarwal, Kumar,, & S, 2026). Infection prevention considerations apply during end-of-life care (Agarwal, Khatoon,, & Kumar, 2026; Mishra, Choudhary,, & Kumar, 2026). Wound management for chronic wounds in end-of-life context warrants specific attention (Singhal, Kumar,, & Kataria, 2026). Critical care protocols appropriately distinguish curative-intent and palliative-intent interventions (Kumar, Kumar,, & Dhabhai, 2026; Ahluwalia, Gupta,, & Chaudhary, 2026). Multimodal analgesia approaches manage pain at end of life (Jagar, Kumar,, & Yadav, 2026). Minimally invasive approaches where feasible reduce surgical burden (Kumar, Kumar,, & Tomer, 2026). Bone health and skeletal care considerations apply to end-of-life patients with fractures (Sahu, Sharma,, & Gupta, 2026; Gupta, Gautam,, & Maitiy, 2026; Rani, & Tyagi, 2026; Singh, Chauhan,, & Kumar, 2026; Durgia, Kumar,, & Neha, 2026). Quality improvement methodology supports systematic enhancement (Bhatnagar, Kumar,, & Shivam, 2026). Biomarker-based assessment supports individualised management (Kumar, Gautam,, & Maitiy, 2026). Multimorbidity-aware care is foundational (Kumar, Sharma,, & Gupta, 2026; Yatish, Khatoon,, & Kumar, 2026).

4.4 Document Accessibility and Health System Integration

The substantial gap between completed ACP documentation and accessibility at end-of-life (only 84% of completed-documentation patients had accessible documents in crisis) identifies a critical operational gap. Crisis-time document retrieval depends on multiple system components: electronic health record availability across care settings, patient/family awareness of document existence and location, primary care physician communication of ACP status, and provider willingness to seek and respect ACP documents in acute settings. Digital health solutions including shared electronic ACP repositories, patient-held digital copies, and structured emergency department ACP retrieval protocols address these challenges (Deepa et al., 2026; Catherine, Gupta, Gopi,, & Swadhi, 2025; Swadhi, Gayathri, Suresh, Catherine,, & Velmurugan, 2025; Vinodh, Subramani,, & Vettriselvan, 2026; Catherine, Nasrin Sulthana, et al., 2026). Strategic partnerships across primary care, hospital systems, ambulance services, and palliative care extend programme reach (Vettriselvan, 2025; Vijayalakshmi et al., 2025; Jenifer et al., 2025). Educational infrastructure for training healthcare providers in ACP-aware acute care is essential (Vinodh, Subramani,, & Vettriselvan, 2026; Bhatnagar, Tyagi,, & John, 2026).

4.5 Mental Health and Bereavement Support

End-of-life care extends to family bereavement support. Family decisional regret was substantially elevated in non-ACP patient families (51%) compared with comprehensive ACP families (12%), demonstrating downstream psychological impact. Structured bereavement support engaged 60-80% of bereaved families in our programme. Mental health support for both patients (anxiety, depression, demoralisation associated with serious illness) and families (anticipatory grief, post-bereavement grief) is essential (Sharma, Sharma,, & Tyagi, 2026; Aumose, & Raj, 2026). For elderly surviving spouses, specific support addressing social isolation and adaptation is important (Ashifa, 2022; Rasi, & Ashifa, 2019; Natarajan et al., 2026). Self-leadership development supports adaptation through transition (Mustafa et al., 2026; Zahoor et al., 2025).

4.6 Rehabilitation and Quality of Death

End-of-life care intersects with rehabilitation philosophy through quality-of-life optimisation rather than functional recovery as the primary goal. Multidisciplinary teams including physiotherapy, occupational therapy, and home-based services support comfort and dignity preservation (Bhatia, Shivakumar,, & Kumar, 2026; Sehgal, Jayapriya,, & Kumar, 2026; Lodha, Sharma,, & Saraswat, 2026; Venice et al., 2026). Adaptive devices and assistive technology address specific functional needs (Natarajan et al., 2026). Advanced rehabilitation technologies inform broader philosophy (Pavithra et al., 2026; Suresh et al., 2026). Virtual reality applications offer immersive comfort-focused experiences for selected patients (Vinodh, & Subramani, 2026).

4.7 Digital Health and Implementation

Digital health tools enhance ACP delivery and implementation. Structured electronic ACP documentation tools support thorough and consistent documentation (Deepa et al., 2026; Catherine, Gupta, Gopi,, & Swadhi, 2025; Swadhi, Gayathri, Suresh, Catherine,, & Velmurugan, 2025). Wearable monitoring of symptoms and physiological parameters supports home-based end-of-life care (Deepa et al., 2026). Tele-palliative care consultation extends specialist reach particularly important for housebound patients (Vijayalakshmi et al., 2025; Vinodh, Subramani,, & Vettriselvan, 2026). AI-supported decision tools assist with prognostic communication and personalised conversation guidance (Devi et al., 2025; Shanthi et al., 2025; Jha, Kumar,, & Neha, 2026). Digital twin frameworks model individual disease trajectories (Subramani, Chillagattu, et al., 2026; Pradeepa et al., 2026). Cyber-physical infrastructure supports document accessibility (Catherine, Nasrin Sulthana, et al., 2026). AI ethics and governance frameworks address particularly sensitive end-of-life patient data (Selvi et al., 2026). Mindful technology use supports presence and connection (Vettriselvan, Velmurugan, et al., 2025).

4.8 Limitations

Limitations include the single-centre setting which over-represents patients engaging with structured palliative care; the inability to definitively establish causation given the observational design; the 24-month follow-up which captures most deaths but not all in this cohort; the inherent challenges of measuring 'preference concordance' when preferences may evolve; the bereavement assessment at 3 months which may not capture longer-term adaptation; and the limited representation of patients without family support. Selection bias toward patients and families engaging with formal ACP processes may not represent broader populations.

V. Conclusion

Across 358 elderly patients with serious advanced illness followed for 24 months, structured ACP engagement substantially improved alignment between documented patient preferences and actual end-of-life care. Comprehensive ACP completion was associated with 14% home death rate (versus 4% in no-ACP), 17% ICU death rate (versus 49% in no-ACP), and 81% family-reported good death outcomes (versus 19% in no-ACP). Strongest predictors of preference-concordant care included comprehensive ACP, designated surrogate, family involvement, palliative team involvement, and document accessibility. The substantial gap between completed ACP documentation and crisis-time accessibility identifies a critical operational challenge addressable through digital health integration. The findings support sustained investment in integrated palliative care, ACP training across healthcare workforce, and system-level approaches to document accessibility.

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