

Sustainable Healthcare Practices in Palliative and Long-Term Care Facilities: Environmental, Organizational, and Patient-Centered Perspectives

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Abstract

Palliative and long-term care facilities operate at the intersection of resource-intensive healthcare delivery, chronic and serious illness, residential care, complex medication use, food and nutrition services, building operations, procurement, transport, waste generation, and patient-centered decision-making. Environmental sustainability in these settings therefore cannot be reduced to energy efficiency or waste reduction without considering clinical appropriateness, resident autonomy, comfort, workforce practices, organizational capacity, and end-of-life ethics. This scoping review maps the environmental, organizational, professional, and patient-centered evidence relevant to sustainable healthcare practices in palliative and long-term care facilities. It examines energy and the built environment, materials and waste, pharmaceutical waste, food systems, water stewardship, transport and procurement, nursing practice, governance, implementation, equity, and ethical boundaries. A structured scoping-review approach was used to map heterogeneous evidence spanning direct palliative and long-term care studies together with clearly distinguished transferable healthcare-sustainability evidence. Study designs, settings, professional groups, sustainability domains, implementation conditions, limitations, and applicability boundaries were charted. Evidence was synthesized thematically without quantitative pooling because the literature included environmental accounting, observational research, qualitative studies, mixed-method investigations, implementation studies, reviews, and conceptual or ethical analyses. The evidence indicates that sustainability in palliative and long-term care is multidimensional. Direct evidence is strongest for selected areas such as hospice carbon accounting, long-term-care food environments, physical care environments, and organizational implementation, while several operational domains rely substantially on evidence transferred cautiously from broader healthcare settings. Environmental gains can also intersect with clinical safety, resident preference, accessibility, workforce workload, and end-of-life priorities. Sustainable palliative and long-term care requires coordinated attention to environmental performance, organizational systems, clinical appropriateness, and patient or resident priorities. Current evidence supports a domain-based approach to identifying environmental pressures and implementation opportunities, while substantial uncertainty remains about setting-specific effectiveness, trade-offs, and equitable implementation.

Keywords: Sustainable healthcare, Palliative care, Long-term care, Healthcare decarbonization, Medication waste, Environmental stewardship

Introduction

Healthcare generates environmental burdens through energy consumption, infrastructure, transport, pharmaceuticals, food, equipment, disposable materials, waste treatment, and complex upstream supply chains.

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Consequently, environmental sustainability is increasingly being treated as a component of health-system performance and governance rather than as a narrow estates-management issue [1-5].

Palliative and end-of-life care raise distinctive questions within this agenda. Recent literature has begun to connect climate change, environmental sustainability, terminal-year resource use, and palliative medicine, although the evidence remains heterogeneous and comparatively immature [6-9]. Direct work in intensive and end-of-life settings has begun to show that environmental consequences can be examined within palliative decision environments, but such findings remain highly dependent on setting and intervention type [10].

Long-term care adds a different organizational context. Research on green-care nursing environments also indicates that the physical setting can influence daily activity, staff-resident interaction, and opportunities for participation [11]. Earlier comparative work in dementia care similarly found that alternative nursing-home environments can affect activity and social interaction [12, 13]. These studies concern care environments and social organization, however, and should not be interpreted automatically as evidence of lower environmental footprints [14, 15].

This distinction is central to the present review. Those meanings overlap in practice but are not interchangeable. The review therefore treats environmental sustainability as the principal focus while mapping organizational, professional, ethical, and patient-centered conditions that determine whether environmental practices can be implemented safely and meaningfully in palliative and long-term care.

The review is also deliberately differentiated from analyses focused primarily on therapeutic environmental quality and its association with comfort, staff well-being, or clinical outcomes. The resulting synthesis examines sustainability as a facility-wide and care-system problem without assuming that one intervention, care model, or environmental strategy is uniformly superior.

Review aim and questions

The aim was to map the range, characteristics, analytical domains, professional roles, implementation conditions, ethical tensions, and evidence gaps relevant to environmentally sustainable practice in palliative and long-term care facilities.

The review addressed the following questions: What environmental sustainability domains are represented in the evidence relevant to palliative and long-term care? How do care setting, professional role, organizational context, patient or resident needs, and study design alter interpretation of that evidence? What is known about energy and the built environment, material waste, pharmaceutical waste, food systems, water stewardship, transport and procurement, nursing practice, governance, implementation, and equity? Finally, where do clinical appropriateness, end-of-life ethics, patient preference, or methodological uncertainty restrict environmental conclusions?

Materials and Methods

This review used a scoping-review design because the literature spans diverse settings, methodologies, environmental outcomes, clinical questions, organizational processes, and normative issues. The purpose was evidence mapping and conceptual differentiation rather than estimation of a pooled intervention effect. The conduct plan followed contemporary JBI guidance for scoping reviews [16, 17], while reporting principles were aligned with the PRISMA extension for scoping reviews [18, 19].

The evidence architecture distinguished three source functions. Direct evidence originated in palliative, hospice, end-of-life, nursing-home, or long-term-care settings. Transferable operational evidence originated in other healthcare environments when it addressed a mechanism plausibly relevant to the review, such as facility energy, healthcare waste, reusable materials, pharmaceutical disposal, transport, or organizational governance. Methodological and contextual references were used to support review design or establish health-system environmental background and were not automatically treated as included substantive evidence.

No journal-quartile criterion was used to determine scientific eligibility. Journal status was handled separately as a reference-list requirement. This separation was necessary because relevance to the review question and methodological value cannot be inferred from journal prestige.

Scoping review framework

The framework proceeded through identification of the review concept, setting boundaries, eligibility specification, evidence discovery, screening, data charting, domain coding, and thematic synthesis. The principal concept was environmentally sustainable healthcare practice, with organizational and patient-centered factors included when they modified implementation or interpretation.

The setting criterion prioritized specialist palliative care, hospice, end-of-life care, nursing homes, residential long-term care, and closely related supportive-care environments. Evidence from hospitals, ambulatory care, or health systems was retained only where it addressed an operational sustainability mechanism not adequately represented in the direct setting-specific literature.

Eligibility criteria

Peer-reviewed journal literature published from 2017 through 2026 was considered eligible when it addressed environmental sustainability, carbon or resource use, facility environmental performance, material or pharmaceutical waste, food or water systems, transport, procurement, environmental nursing practices, sustainability governance, or patient-centered environmental trade-offs relevant to the review.

Direct palliative and long-term care reports were eligible across observational, qualitative, mixed-method, implementation, environmental-accounting, review, and conceptual designs. Wider healthcare studies were eligible when the environmental mechanism had a credible operational relationship to palliative or long-term care and when the limits of transfer could be made explicit.

Reports concerned only with the long-term survival of a programme or organization were not treated as environmental evidence unless an environmental dimension was also present. Likewise, “green care” terminology describing nature-based or alternative residential care was not taken as proof of reduced carbon emissions or resource consumption.

Information sources and search strategy

The evidence search was executed on 16 September 2026 through multiple structured discovery routes combining palliative-care terminology, hospice and end-of-life terminology, long-term-care and nursing-home terminology, and environmental-sustainability concepts including climate, carbon, energy, waste, medicines, food, water, transport, procurement, and sustainable healthcare.

Separate searches were used because a single broad query produced substantial conceptual noise between environmental sustainability, programme sustainability, climate-health research, and unrelated uses of “green” terminology. Targeted title and DOI searches were subsequently used to verify relevant candidate reports and bibliographic information.

The accessible search interface returned ranked and bounded discovery sets rather than a complete native database export. Accordingly, the numerical flow below describes the executed evidence-discovery record for this review and is not presented as an estimate of every record theoretically retrievable from PubMed or other bibliographic databases.

Study selection

Across the four countable discovery routes retained in the review record, 38 records were surfaced. One directly observed duplicate was removed, leaving 37 unique records. Seven records were excluded immediately because they fell outside the publication window or were clearly unrelated to the review question, leaving 30 records for deeper eligibility assessment.

Subsequent screening distinguished direct palliative or long-term care evidence, transferable healthcare-sustainability evidence, and contextual or methodological material. Particular attention was given to reports using “sustainability” in meanings unrelated to environmental performance so that implementation persistence, financial continuity, or workforce sustainability were not silently reclassified as environmental outcomes.

The documented search record did not separately enumerate a final exhaustive database-native included-evidence denominator. Consequently, the review does not convert the 30 deeper-assessment records into a fabricated final inclusion count. Interpretation was restricted to the reviewed evidence set and to distinctions recoverable from the evidence-extraction record.

The selection logic is summarized in **Figure 1**.

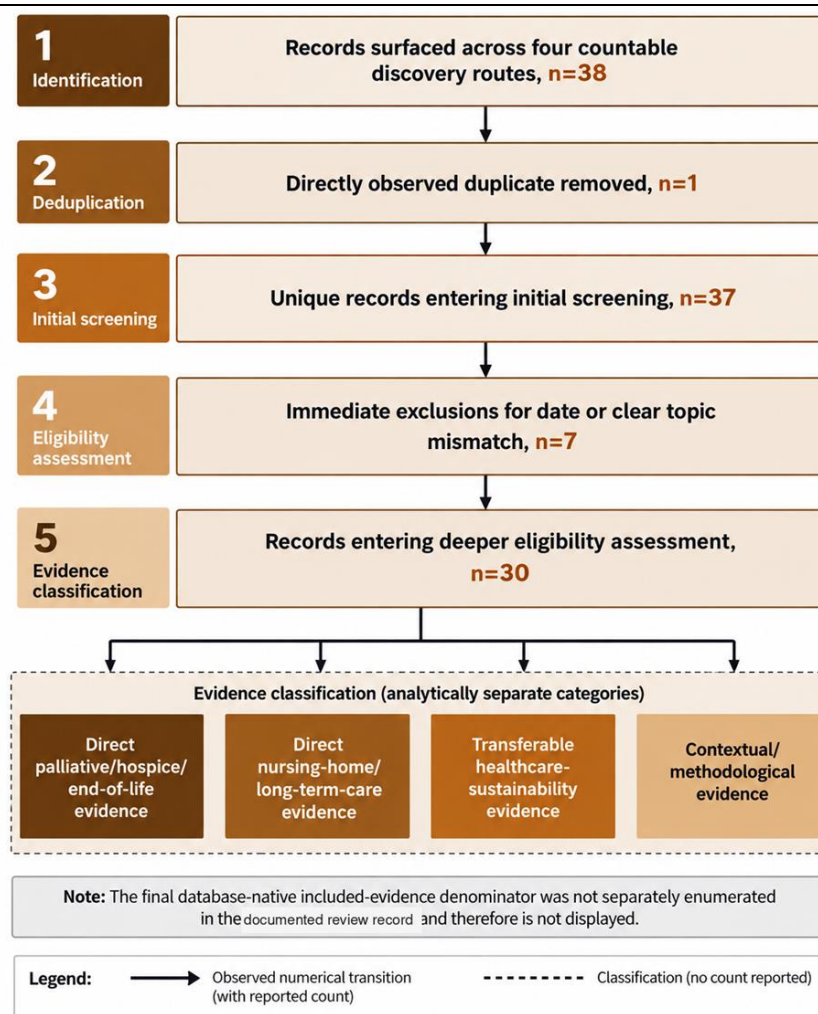


Figure 1. Executed Evidence-Discovery and Eligibility Pathway for Sustainable Palliative and Long-Term Care Practice

Data charting

Data were charted at report level while retaining linkage to an underlying study or programme where multiple publications could plausibly describe the same evidence source. Extracted fields included design, country or region, care setting, population, professional groups, reported sample size, serious-illness context, focal sustainability construct, operationalization, intervention or exposure, comparator where applicable, measurement source, organizational or clinical process, analytical method, temporal design, principal finding, contradictory or null findings, reported limitations, applicability boundaries, and potential relevance to tables or figures.

Each evidence item was also coded according to whether its principal contribution was directly observed, interpretive, conceptual, ethical, or proposed. Missing information was left as not reported rather than completed by inference. This approach was especially important for environmental studies because carbon-accounting boundaries, life-cycle assumptions, energy mixes, transport models, waste-management infrastructure, and procurement systems can differ substantially between settings.

Results and Discussion

The mapped literature confirms that sustainable healthcare in palliative and long-term care cannot be represented adequately by a single environmental indicator. Direct palliative evidence remains concentrated in a relatively small group of studies and reviews concerned with climate, hospice operations, terminal-year healthcare, end-of-life decision-making, and selected resource-intensive clinical settings [6, 20]. Broader healthcare sustainability evidence is considerably more developed and includes carbon accounting, material substitution, pharmaceuticals, transport, professional practice, and organizational performance systems [21, 22].

A central finding is the difference between environmental burden, environmental practice, and sustainability implementation. Environmental-burden studies estimate emissions, resource consumption, waste, or other

environmental pressures. Environmental-practice studies examine changes such as reusable products, waste management, reduced medicine wastage, or changes in travel. Implementation studies examine whether organizations and professionals have the knowledge, resources, authority, workflows, governance, and infrastructure required to maintain those practices. These evidence types answer different questions and cannot be treated as interchangeable demonstrations of effectiveness.

The evidence also contains a pronounced setting gradient. Hospice and long-term-care facilities combine healthcare functions with characteristics of residential environments. Meals, heating and cooling, laundry, domestic activity, outdoor space, family access, resident mobility, and long periods of occupancy can therefore become more prominent than in short-stay acute-care settings. Conversely, some hospital sustainability interventions depend on centralized services or purchasing volumes that may not exist in smaller hospices or residential facilities. Direct hospice carbon-footprint evidence demonstrates that operational emissions can be measured in these settings, while also illustrating why findings from an individual facility require contextual interpretation [23, 24].

Characteristics of the evidence

The evidence base contains environmental footprint analyses, life-cycle assessments, qualitative interviews, ethnographic observation, cross-sectional comparative studies, mixed-method investigations, participatory systems research, longitudinal implementation studies, systematic and scoping reviews, policy analyses, and conceptual or ethical articles. This methodological diversity provides breadth but limits direct comparison.

Long-term-care evidence is particularly valuable for understanding how residential and organizational context shapes environmental practice. Comparative staff research from Green Care Farms and traditional nursing homes shows that work environments and staff experiences can differ across models of residential care [25]. Participatory systems research on long-term-care food environments further demonstrates that food practices arise through interacting organizational, economic, social, and policy mechanisms [26, 27]. Longitudinal implementation evidence also shows that a practice introduced into nursing homes may persist unevenly across organizations and over time [28, 29]. Here, persistence is an implementation outcome; it should not be mistaken for environmental sustainability itself.

Geographic concentration is another limitation. The synthesis therefore treats country, facility model, regulatory structure, and organizational resources as interpretation boundaries rather than assuming that a practice has identical feasibility across jurisdictions.

Table 1. Methodological and Setting Profile of the Evidence Relevant to Sustainable Palliative and Long-Term Care

Evidence profile	Typical care context	Principal unit of analysis	Main contribution to this review	Key interpretation boundary
Direct hospice and palliative environmental studies	Hospice, end-of-life and intensive-care settings	Facility, care pathway or palliative intervention	Establishes that environmental burdens can be examined within serious-illness care	Small and setting-specific evidence base
Long-term-care environmental and care-environment research	Nursing homes, residential care and dementia care	Resident, staff, facility or care environment	Clarifies residential, organizational and patient-centered conditions	Care-environment quality is not equivalent to environmental footprint
Healthcare footprint and life-cycle studies	Health systems, hospitals and ambulatory services	Service, facility, product or supply chain	Identifies operational environmental mechanisms transferable to long-term care	Transferability depends on scale, infrastructure and care model
Implementation and organizational research	Hospitals, nursing homes and health organizations	Staff, team, manager or organization	Identifies conditions influencing adoption and persistence	Association or implementation feasibility does not establish environmental effectiveness
Review, policy and conceptual evidence	Cross-setting	Literature, framework or policy system	Defines domains, ethical tensions and governance implications	Does not supply direct facility-level effect estimates

Note: The table intentionally contains no Vancouver citation numbers. Evidence-derived entries remain traceable through the evidence-extraction record and accompanying citations.

Energy and built environment

Energy use and the built environment form related but analytically distinct components of healthcare sustainability. Carbon-footprint studies show that clinical practices and healthcare facilities generate emissions through energy consumption, heating, cooling, transport, purchased materials, and supply chains [30, 31]. Wider systematic evidence indicates that mitigation strategies may target energy efficiency, renewable energy, estate design, procurement, transport, and clinical operations, but intervention evidence remains heterogeneous and

sensitive to local infrastructure [22]. National analyses likewise demonstrate that the relative importance of these sources changes with the energy system, supply-chain structure, and organization of healthcare delivery [32, 33]. In palliative and long-term care, the built environment has additional relevance because the facility is often both a place of care and a place of living. Thermal comfort, lighting, accessibility, outdoor space, quietness, domesticity, privacy, infection control, and staff workflow can influence resident experience. Evidence from green-care nursing environments indicates that spatial configuration and access to meaningful activity can support daily living and reciprocal staff-resident interactions [11, 34]. Such findings are relevant to patient-centered sustainable design because environmental interventions that materially reduce energy use while degrading comfort, accessibility, or residents' ability to engage with their environment would produce a different clinical and ethical profile from interventions that achieve both goals.

Waste reduction and materials

Healthcare material use involves disposable clinical items, packaging, personal protective equipment, laundry, reusable equipment, general waste, recycling streams, and upstream manufacturing. Across healthcare settings, substituting reusable products for disposable alternatives can reduce some environmental burdens, but implementation depends on infection-control requirements, reprocessing infrastructure, procurement contracts, staff acceptance, workflow, and confidence in product performance [35, 36]. The relevant decision is consequently lifecycle-specific rather than a presumption that either disposable or reusable products are inherently preferable. Laundry illustrates this systems perspective. Hospital life-cycle assessment demonstrates that reusable textiles carry environmental burdens from washing, drying, energy, detergent, transport, and replacement, even when they displace disposable alternatives [37, 38]. Long-term care and hospice facilities may have particularly high textile turnover because bedding, towels, clothing and continence-related care form part of residential as well as clinical operations. Actual environmental performance will depend on laundering technology, energy source, transport distance, textile lifespan, infection-control requirements, and whether laundry is processed on site or outsourced. Waste segregation also illustrates why staff behavior alone is an incomplete explanatory model. A facility cannot achieve circular material use merely by instructing individual clinicians to waste less if its purchasing and disposal systems make alternative behavior difficult or impossible.

Pharmaceuticals and medication waste

Medicines deserve separate analysis because their sustainability implications differ from general material waste. Hospital-based analyses have therefore framed drug-waste reduction as a system problem involving prescribing, pharmacy operations, inventory management, packaging, procurement, and disposal [39, 40].

Evidence from oral anticancer medicines demonstrates that carefully controlled redispensing of unused medicines can reduce environmental burdens in a defined pathway when product quality, storage history, safety, and logistical requirements are satisfied [41, 42]. Medication regimens near the end of life can change rapidly, and medicines may be stored in homes, hospices, or residential facilities under conditions that complicate quality assurance. Controlled drugs and individually dispensed items also operate under jurisdiction-specific regulatory requirements.

Pharmaceutical disposal raises an additional environmental and public-health issue. Inadequate last-mile management can permit active pharmaceutical ingredients, packaging, and hazardous materials to enter poorly controlled waste pathways [43, 44]. Environmentally responsible medication management in palliative or long-term care therefore has at least three distinct targets: preventing avoidable unused stock, identifying safe opportunities for reuse or redistribution where legally and clinically permissible, and ensuring appropriate disposal when reuse is impossible.

These environmental objectives must remain subordinate to safe symptom control. Medicines required for pain, dyspnoea, agitation, nausea, seizures, delirium, or other urgent end-of-life symptoms cannot be treated primarily as waste-prevention opportunities. The relevant sustainability question concerns avoidable inefficiency around appropriate medication care, not minimization of clinically necessary treatment.

Food and nutrition systems

Food systems occupy an unusually complex position in long-term and palliative care because meals are simultaneously nutritional interventions, components of daily routine, sources of comfort and identity, and contributors to procurement, refrigeration, preparation, transport, packaging, and food waste. Mixed-method evidence from Dutch hospitals and long-term-care facilities shows that institutional food environments differ substantially by setting and that long-term-care organizations have distinct routines, structures, and opportunities for influencing food provision [15].

Participatory systems research in long-term care further shows that food environments emerge from interacting organizational, economic, social, and policy mechanisms rather than from individual food choices alone [26]. Procurement contracts, budgets, kitchen organization, staffing, regulation, resident preferences, menu planning,

food-service models, waste practices, and the relative priority assigned to health or sustainability can all shape what is ultimately served.

For palliative and frail long-term-care populations, environmental interpretation must also recognize the clinical function of food. Reduced appetite, dysphagia, cachexia, altered taste, fatigue, dementia, cultural preference, dependence on assistance, and the symbolic importance of familiar foods may constrain standard sustainability interventions. A lower-carbon menu that residents will not eat, or that increases nutritional risk or distress, cannot be interpreted solely through its environmental profile.

The evidence therefore supports a patient-centered food-sustainability approach in which procurement, preparation, waste prevention, menu design, nutritional adequacy, cultural acceptability, and resident preference are evaluated together. Environmental goals are most defensible when avoidable waste and upstream burden can be reduced without weakening nutrition, comfort, choice, or the social meaning of meals.

Water and resource stewardship

Water stewardship is less developed in the direct palliative and long-term-care literature than energy, food, or waste management. Broader healthcare sustainability reviews nevertheless identify water consumption, sanitation, cleaning, sterilization, cooling, laundry, food preparation, and facility maintenance as interconnected resource demands [22]. In residential care, attempts to reduce water use must account for hygiene, infection prevention, bathing assistance, continence care, laundry, hydration, and food-service requirements. The evidence therefore supports measurement of avoidable consumption and inefficient processes rather than undifferentiated reductions in water use. Where direct long-term-care evidence is lacking, conclusions should remain explicitly provisional.

Transport and procurement

Transport contributes to healthcare emissions through patient journeys, staff commuting, family travel, deliveries, community services, and movement between facilities. Life-cycle comparisons of virtual and in-person healthcare demonstrate that travel avoidance can reduce emissions under some conditions, although digital infrastructure, journey length, transport mode, and service design influence the result [45]. Population-based modelling similarly shows that healthcare-travel emissions vary substantially by transport mode and clinical pathway [46].

Procurement extends the analysis upstream. Facility purchasing determines which medicines, food products, textiles, devices, disposable materials, maintenance services, and contracted logistics enter the care system. A lower-carbon purchasing strategy therefore requires lifecycle information and supplier accountability while preserving clinical reliability, infection control, accessibility, and continuity of supply. Hospices and long-term-care facilities may also have less purchasing leverage than large acute hospitals, making collective procurement, contractual standards, and regional coordination potentially important implementation mechanisms.

Nursing sustainability practices

Nurses influence environmental performance through everyday material use, waste segregation, procurement feedback, medication handling, equipment choice, patient education, and coordination of care. Qualitative evidence indicates that sustainability practices are shaped by knowledge, workload, professional norms, available infrastructure, and organizational expectations [47]. Research on biomedical-waste practice likewise shows that education and procedural support can improve operational behavior, but individual knowledge is insufficient when facilities lack appropriate systems [48].

Recent implementation work demonstrates that nurses can also participate directly in organized decarbonization initiatives [49]. Their role should not, however, be framed as personal responsibility for system-level environmental failure. Sustainable nursing practice depends on authority, resources, leadership, purchasing decisions, workflow design, and institutional support.

Organizational governance and leadership

Environmental sustainability becomes operational only when organizations define responsibility, measure performance, allocate resources, and integrate environmental criteria into routine management [50]. Nurse managers' sustainability awareness and leadership have been associated with organizational engagement in environmental practices, although such evidence does not establish a simple causal pathway from managerial attitudes to environmental outcomes [51].

Performance-management research similarly suggests that environmental indicators remain inconsistently incorporated into hospital governance systems [52]. Long-term care adds another conceptual challenge because its sustainability also includes economic, workforce, social, technological, and environmental dimensions [53]. Effective governance therefore requires these dimensions to remain distinguishable. A financially persistent service is not necessarily environmentally sustainable, and an environmentally efficient facility may still be socially or clinically unsustainable.

Patient-centered sustainability

Patient-centered sustainability requires environmental decisions to remain compatible with comfort, autonomy, accessibility, continuity, and individual goals. Earlier initiation of palliative care has been associated with lower late-life acute-hospital use [54], but reduced healthcare utilization cannot automatically be interpreted as environmental benefit. The clinical meaning of reduced utilization depends on whether care remains appropriate and aligned with patient preferences.

Similar caution applies to telehealth, transport reduction, reduced material use, and changes in food or medication systems. An intervention may reduce one environmental burden while increasing treatment workload, family burden, inequity, or distress. Patient-centered sustainability therefore asks not only whether environmental resources can be saved, but also who experiences the consequences of that saving.

Palliative and end-of-life ethical considerations

Environmental stewardship acquires a distinctive ethical boundary near the end of life. Palliative interventions in intensive-care settings can alter patterns of treatment, communication, and decision-making [55], but environmental objectives cannot determine whether clinically appropriate treatment should be withheld. Decisions must remain grounded in benefit, burden, proportionality, patient preference, and the goals of care.

Advance-care planning provides an illustrative case. Population evidence associates planning with differences in hospital use and costs near the end of life [56]. Environmental stewardship is most defensible when it reduces avoidable or unwanted care, waste, duplication, or inefficient systems without redefining clinically necessary care as environmentally undesirable.

Implementation facilitators

Facilitators include visible leadership, staff participation, environmental measurement, practical workflow redesign, adequate infrastructure, local adaptation, procurement support, and feedback on outcomes. Longitudinal nursing-home evidence indicates that practice persistence depends on organizational conditions rather than initial adoption alone [29]. Nurse-led implementation studies further suggest that sustainability objectives become more actionable when responsibility is embedded in clinical operations instead of remaining external to care delivery [49].

Organizational measurement systems can reinforce this process by making environmental performance visible alongside established operational indicators [52]. In resource-constrained or geographically isolated settings, partnerships, community relationships, reliable medicine access, and workforce networks may also determine whether service changes are sustainable over time [57]. No single facilitator appears sufficient across all settings.

Equity considerations

Environmental interventions can redistribute burdens across patients, families, workers, and communities. Travel-reduction strategies may benefit people living near digital infrastructure while disadvantaging those with poor connectivity, sensory impairment, cognitive difficulties, language barriers, or a preference for in-person care. Sustainable procurement may reduce environmental burden but increase cost or restrict availability when markets are limited. Long-term-care policy must therefore consider environmental sustainability alongside economic, social, and technological sustainability [53].

Palliative care adds geographic and socioeconomic vulnerability. Rural and lower-resource services frequently depend on fragile workforce, medicine, transport, and community networks [57]. Broader valuation approaches in palliative care also suggest that conventional economic measures can miss effects distributed across families and society [58]. Equity analysis should therefore examine where environmental benefits occur, who bears implementation costs, and whether environmental policies unintentionally reduce access to appropriate care.

The cross-domain relationships synthesized in this review are summarized in **Figure 2**.

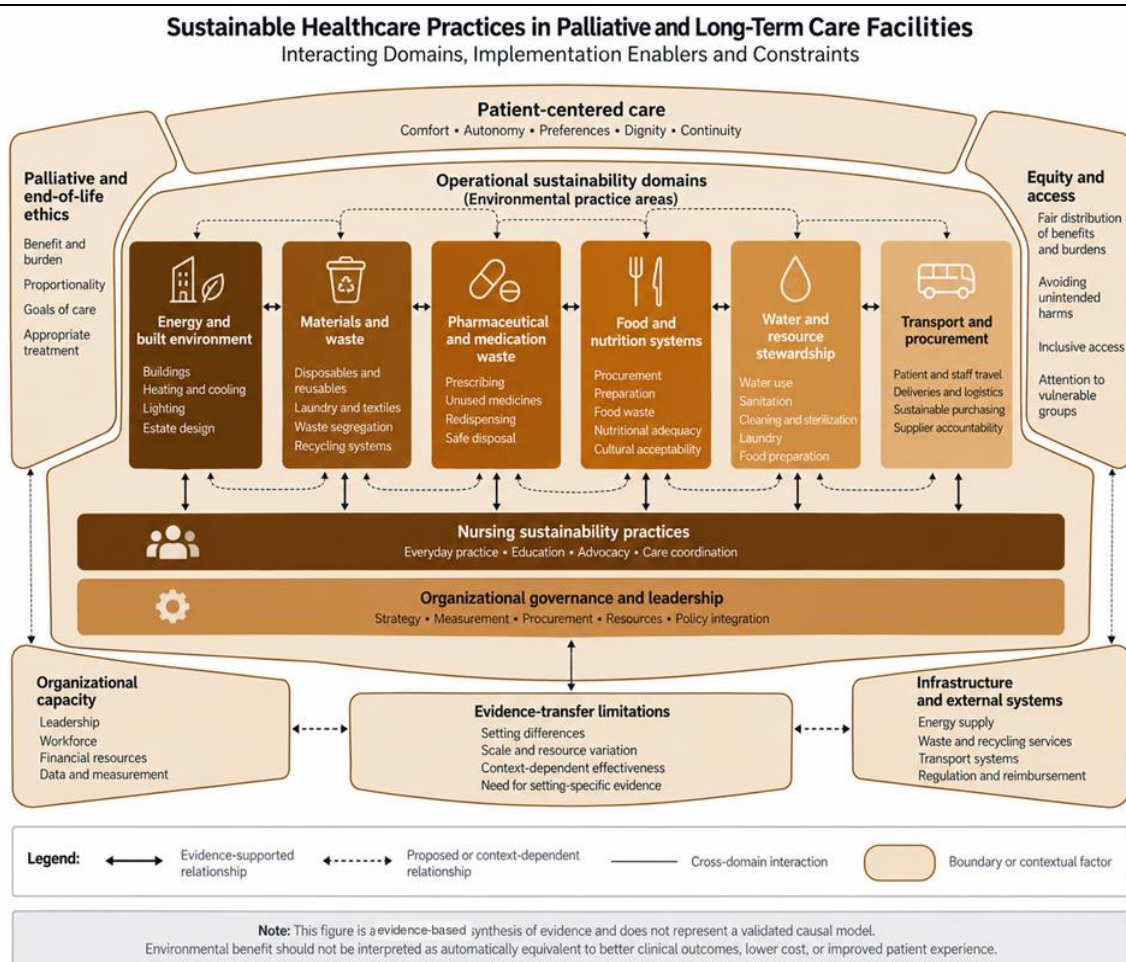


Figure 2. Environmental Sustainability as a Constrained Care-System Field in Palliative and Long-Term Care

Evidence gaps

Several gaps remain conspicuous. Water stewardship, pharmaceutical waste within specialist palliative settings, lifecycle assessment of residential-care materials, and environmental consequences of different long-term-care models remain particularly underdeveloped.

The evidence base is also geographically concentrated and methodologically fragmented. The absence of studies in a domain should therefore be interpreted as an evidence gap, not as evidence that the domain is environmentally unimportant.

This review shows that sustainability in palliative and long-term care is best understood as a constrained system of environmental practices rather than a list of isolated “green” actions. Whether those practices can change depends on staff participation, managerial authority, infrastructure, supply chains, regulation, and the characteristics of the population being cared for.

Direct evidence from hospice and long-term-care settings remains substantially thinner than the broader healthcare sustainability literature. A reusable device, virtual consultation, centralized procurement strategy, or waste-management intervention that performs well elsewhere may produce different consequences in residential care because of facility scale, resident frailty, staffing, infection-control needs, or geographic accessibility.

The central synthesis is consequently one of conditional compatibility. They can also conflict. The scientific task is to identify those conditions rather than assume that environmental improvement automatically generates clinical or organizational benefit.

Policy and management implications

Policy should enable environmental performance to be considered alongside quality, safety, accessibility, workforce capacity, and financial sustainability. Payment and service design can change patterns of end-of-life care [59], but environmental implications should be assessed separately rather than inferred solely from reduced expenditure or utilization.

Managers also need procurement standards, meaningful environmental indicators, supplier information, and governance structures proportionate to facility size. In rural and resource-constrained settings, sustainability policy must additionally protect service access and implementation capacity [57, 58].

Conclusion

Sustainable palliative and long-term care depends on more than reducing energy use, waste, or carbon emissions. Environmental practices operate within care systems shaped by clinical need, resident preference, workforce capacity, organizational governance, infrastructure, procurement, and equity. The available evidence supports targeted reduction of avoidable environmental burdens when changes preserve safety, comfort, access, dignity, and continuity of care. Stronger setting-specific evidence is still needed before particular sustainability strategies can be treated as universally effective across hospices and long-term-care facilities.

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