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The Impact of *Laudato si'* on Hospital Sustainability Strategies*

Abstract

RESEARCH OBJECTIVE: The goal of this article is twofold: to compare *Laudato si'* Integral Ecological models to secular Environmental, Social, and Governance (ESG) models, and to assess the outcomes of the implementation of *Laudato si'* ecological models in hospitals as compared to.

THE RESEARCH PROBLEM AND METHODS: The article addresses two research questions: *To what extent Laudato si' Integral Ecology models differ from secular ESG models?* and *What is empirical evidence of the outcomes of the implementation of Laudato si' Integral Ecology models in hospitals as compared to secular ESG models?* This desktop study uses scoping reviews and explores EBSCOhost and ScienceDirect databases.

THE PROCESS OF ARGUMENTATION: A comparison of *Laudato si'* Integral Ecology models to secular ESG models leads to the conclusion that the previous possess some competitive advantages over the second ones so can be treated as a valuable supplement. Empirical evidence of the *Laudato si'* Integral Ecology models remain limited.

RESEARCH RESULTS: The article argues that *Laudato si'* and the subsequent *Laudato si'* Action Platform (LSAP) have contributed to the theory of ecology and transitioned hospitals. Empirical evidence of the implementation of Integral Ecology models rooted in *Laudato si'* remains rare and rather inconclusive.

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However, few case studies indicate superior outcomes in financial resilience, clinical recovery, and organizational stability of hospitals implementing *Laudato si'* ecological models.

CONCLUSIONS, INNOVATIONS, AND RECOMMENDATIONS:

The article shows that hospitals' pro-ecological strategies and initiatives do not attract adequate researchers' attention despite their environmental harm. There is not sufficient empirical ground to prove that LSAP and Integral Ecology mode are more effective than secular ESG models. All these ask for intensification of research on *Laudato si'* ecological models.

KEYWORDS:

encyclical *Laudato si'*, sustainability, hospitals, greenhouse gas emissions, Environmental, Social, and Governance (ESG) strategies.

INTRODUCTION

Healthcare is one of the largest and fastest-growing sectors globally, driven by rising demand, aging populations, and expanding medical technologies. Across WHO, OECD, and World Bank studies and data sources, a consistent picture emerges: global health expenditure has been rising both in absolute terms and as a share of world GDP, converging around roughly 10% of global economic output, with higher averages ($\approx 9\text{--}10\%$ + of GDP) in OECD countries and much lower levels in many low- and lower-middle-income countries (Sterlin, 2024).

All the positive medical, economic and social roles of healthcare systems in modern society notwithstanding, one must accept that the healthcare sector is also environmentally harmful (Piscitelli et al., 2023) due to extensive waste generation, energy intensiveness, greenhouse gas emissions, and water demand. Hospitals have a high share in environmental harm because they are the largest operational units in the healthcare system and consume 50–80 % of the resources in this system (van Shie, 2024).

Hospitals generate massive volumes of both hazardous and non-hazardous waste, with a single operating room producing up to 2,500 kg of waste annually (Magasich-Airola et al., 2024). While roughly 85% of hospital waste is non-hazardous, poor segregation often results in large amounts of general waste being incorrectly classified as infectious,

leading to energy-intensive and high-carbon disposal through incineration. The widespread transition from reusable to single-use medical devices in recent decades increased the volume of materials that must be manufactured and then discarded (Magasich-Airola et al., 2024). Improper disposal in landfills can further lead to the pollution of soil and groundwater through toxic leachate (Ansari et al., 2019).

Hospitals are energy-intensive facilities operating continuously, consuming two to three times more energy than standard commercial buildings (Schwab et al., 2025; Stevanovic et al., 2019). A significant portion of these emissions, approximately 25%, stems from the provision of heat and cooling, while 12% is attributed to general electricity use (Schwab et al., 2025). High-demand systems such as HVAC (Heating, Ventilation, and Air Conditioning), lighting, and power-intensive diagnostic equipment in departments like radiology are primary drivers of energy consumption (Grzymała-Kazłowski, 2024; Schwab et al., 2025).

Healthcare accounts for 4.4% of global greenhouse gas emissions (Health Care Without Harm & Arup, 2019, p. 4). A systematic review of research using Input–Output analysis to quantify the carbon footprint of healthcare systems reveals that hospitals are leading carbon footprint producers (Keil et al., 2024). The use of volatile anesthetic gases in operating rooms contributes significantly to global warming and ozone depletion (Magasich-Airola et al., 2024). Gases such as desflurane are particularly harmful, with a global warming potential 2,540 times that of carbon dioxide (Schwab et al., 2025). These gases are often vented directly into the atmosphere, making the operating room disproportionately responsible for roughly 40% of a hospital's total carbon emissions (Magasich-Airola et al., 2024).

Healthcare institutions utilize immense quantities of water for sanitation, sterilization, and general operations, which can exacerbate regional water scarcity and climate change (Tir & Aggoun, 2025). Beyond consumption, hospital effluents are a source of emerging pollutants; if wastewater is not properly treated, it can release toxic chemicals, pharmaceuticals, and pathogens into the environment, interrupting ecological balances (Ansari et al., 2019; Tsioumpri et al., 2020). For example, anesthesia waste like *Propofol* is highly toxic to aquatic organisms and is non-biodegradable in water (Magasich-Airola et al., 2024).

Consequently, the healthcare sector in general and hospitals in particular constitute an important element of the set of entities and institutions contributing to ecological harm thus it fully deserves public (researchers included) attention. One should also acknowledge that the healthcare sector is much less represented in empirical analyses of environmental harm as compared to industry and other service sectors (especially transport).

This work is an attempt to evaluate how *Laudato si'* has influenced hospitals as institutions engaged in implementation of pro-ecological strategies and operations. The goal of the article is twofold. First is to compare *Laudato si'* Integral Ecology models to secular Environmental, Social, and Governance (ESG) models to answer the first research question: *To what extent Laudato si' Integral Ecology models differ from secular ESG models?* The second is to assess the influence of the encyclical strategy and day-to-day operations of hospitals, and to answer the second research question: *What is empirical evidence of the outcomes of the implementation of Laudato si' Integral Ecology models in hospitals as compared to secular ESG models?* The article is structured as follows: first the methodology used in the study is briefly described followed by characteristic features of *Laudato si'* and Integral Ecology models (*Laudato si'* ecological models) and the secular ESG models. Then empirical (tangible and intangible) outcomes of the implementation of *Laudato si'* Integral Ecology models and the secular ESG models are identified. Conclusions crown the article.

METHODOLOGY

The article is based on a desk study and publications extracted from EBSCOhost (including MEDLINE) and ScienceDirect using a semi-scoping review (e.g. individually done, without rigorous reporting standards). The following keywords (in various combinations) were used in the databases searching: *Laudato si'*, hospital, environmental, social, and governance (ESG) strategies, and sustainable strategy using a predefined data-extraction framework (from 2015 on). A three-stage screening process was used: title screening, abstract screening followed by full-text assessment. First, an initial list of a total of 1993 publications was extracted followed by the elimination

of duplicates which made a list of 1714 titles. Then the titles of all these 1714 items were checked and publications with titles fitting with the research questions were selected (in total of 484). Abstract screening resulted in a set of 108 publications, and it was reviewed in its entirety. Finally, 30 publications were selected and used. Supplementary to this were 6 grey literature items (reports, theses, policy documents) obtained from google. As stated above, two research questions were formulated.

LAUDATO SI', INTEGRAL ECOLOGY, AND SECULAR ESG

Laudato si' which is a transformative “ecclesiastical declaration of interdependence between humans and the rest of nature” (Pope Francis, 2015) has catalyzed a paradigmatic shift in how Catholic and faith-inspired hospitals understand their mission, moving sustainability from a peripheral “add-on” to an intrinsic requirement for healing, justice, and human dignity. *Laudato si'* consists of six chapters: “What is Happening to Our Common Home”, “The Gospel of Creation”, “The Human Roots of the Ecological Crisis”, “Integral Ecology”, “Lines of Approach and Action” and “Ecological Education and Spirituality”. Throughout *Laudato si'*, Pope Francis addressed the most pressing contemporary socio-ecological challenges: pollution and climate change, availability of clean water, the loss of biodiversity, decline in the quality of human life, the breakdown of society and global inequality (Misleh et al., 2016).

The encyclical formulates seven goals which apply also to hospitals and are expected to integrate by 2028–2030:

1. Response to the Cry of the Earth (e.g., carbon neutrality and biodiversity).
2. Response to the Cry of the Poor (e.g., defending life from conception to natural death by addressing environmental determinants of health).
3. Ecological Economics (e.g., sustainable procurement and ethical investment).
4. Adoption of Sustainable Lifestyles (e.g., reducing plastic waste and meat consumption in hospital cafeterias).

5. Ecological Education (e.g., training medical staff on planetary health).
6. Ecological Spirituality (e.g., healing gardens and nature-based prayer spaces).
7. Community Resilience (e.g., hospitals acting as “anchors” for local ecological protection) (Pope Francis, 2015).

As shown by Molina & Pérez-Garrido (2022), *Laudato si'* for the first five years has considerably influenced production, in terms of publications, in the scientific-technical and academic domains, paying special attention to how it has influenced decision-making and planning of new initiatives to mitigate the socio-environmental crisis.

Integral Ecology

Integral Ecology (IE) presented in Chapter 4 is the encyclical’s main solution to ongoing social and environmental problems and contributes to the theory of ecology and sustainable development (Christie et al., 2019).

Integral Ecology affirms that humans are part of a broader world and calls for “comprehensive solutions which consider the interactions within natural systems themselves and with social systems” (Pope Francis, 2015). While the study of ecosystems has become well-known in the science of ecology, IE expands this paradigm to consider the ethical and spiritual dimensions of how humans are meant to relate to each other and the natural world – drawing on culture, family, community, virtue, religion, and respect for the common good.

While traditional ecology focuses primarily on biological ecosystems, Integral Ecology “expands this paradigm to consider the ethical and spiritual dimensions” of how humans relate to one another and the natural world, drawing on culture, family, and respect for the common good (Rice, 2022). Central to this paradigm is the conviction that “everything in the world is connected” and that “nature cannot be regarded as something separate from ourselves or as a mere setting in which we live” (Pope Francis, 2015)

IE rejects the “technocratic paradigm” and “tyrannical anthropocentrism,” which treats nature as a “cold body of facts” or “raw material to be hammered into useful shape” (Pope Francis, 2015). It attributes an “intrinsic value independent of its usefulness” to natural

systems and emphasizes that because “all creatures are connected, each must be cherished with love and respect” (Cannon & Cushman, 2017; Pope Francis, 2015)

IE argues that ecological health cannot be achieved without addressing inequities in housing, labor, healthcare access, and political voice. Conversely, social justice cannot be realized in a collapsing ecological system that disproportionately harms the most vulnerable. This framework rejects siloed thinking: environmental policy, economic development, and public health must be understood as components of a single, interdependent system. In this view, sustainability is not merely about conservation but about cultivating relationships – between humans and nature, between institutions and communities, and between present and future generations.

Integral Ecology is logically connected to two concepts which need to be further developed below: Green Hospital Strategy (GHS) and Hospital Green Strategy (HGS).

Green Hospital Strategy and Hospital Green Strategy

While GHS and HGS are often used interchangeably in casual conversation, academic and management literature (Schwab et al., 2025; Zagonari, 2021) distinguishes them through their scope and intent.

Green Hospital Strategy can be perceived as a paradigm, secular concept. GHS represents a comprehensive sustainability model that integrates environmental, social, and economic dimensions to minimize the significant ecological footprint of the healthcare sector (Maden & Kerse, 2026). It is the vision of a *Green Hospital* – an institution that achieves Leadership in Energy and Environmental Design (LEED) or Building Research Establishment Environmental Assessment Method (BREEAM) certification, eliminates toxic chemicals, and integrates with the circular economy. GHS can be treated as a global standard.

A defining characteristic of contemporary secular strategies is the integration of Environmental, Social, and Governance (ESG) metrics. These criteria reframe sustainability from a compliance-driven activity into a core component of clinical performance and transparency (Mais et al. 2025). Operationally, secular GHS focuses on technical infrastructure certified by international standards like LEED or

BREEAM, emphasizing high-performance ventilation, photovoltaic integration, and smart energy management to mitigate climate-related operational risks (Takeda et al., 2025).

The secular approach to greening hospitals is often guided by the Triple Bottom Line (TBL) – balancing profit, people, and the planet – and is motivated by institutional pressures to reduce high disposal costs and future-proof against upcoming carbon mandates (Abdulai & Im, 2025; Ibrahim et al., 2025; Maden & Kerse, 2026).

In GHS strategies prioritize the “waste hierarchy” (Reduce, Reuse, Recycle, or triple R) and energy efficiency in high-demand areas like the operating room, which is disproportionately responsible for 40% of hospital emissions and up to 30% of its waste (Grzymała-Kazłowski, 2024; Magasich-Airola et al., 2024; Tir & Aggoun, 2025). Secular hospitals prioritize “green procurement” and third-party reprocessing of single-use medical devices to minimize Scope 3 emissions (MacNeill et al., 2020).

GHS use technical benchmarks and facilities utilize international standards such as LEED and BREEAM to optimize heat recovery and ventilation, aiming for significant net energy reductions (Grzymała-Kazłowski, 2024; Tsioumpri et al., 2020) and incorporates Building Information Modeling (BIM) and ISO 14001 to track real-time performance indicators and ensure transparent reporting (Grzymała-Kazłowski, 2024; van Schie, 2024).

In respect to patient satisfaction GHS relays on technical excellence and focuses on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores regarding cleanliness and lighting,

GHS is increasingly shaped by the circular economy, particularly in the management of clinical waste and supply chains.

Theoretically, secular ethics in healthcare are distinguished by their reliance on social pressures from the broader society and legal mandates to achieve long-run sustainability, rather than communal spiritual motivations (Zagonari, 2021). Ultimately, GHS views ecological transformation as a pragmatic necessity for maintaining public trust and ensuring the health of the populations they serve in a carbon-constrained economy.

Hospital Green Strategy rooted in *Laudato si'* pivots toward a framework of Integral Ecology, viewing the health of the patient

as inseparable from the health of the planet (Pope Francis, 2015; Ibrahim et al., 2025; van Schie, 2024).

An important institution promoting *Laudato si'* Integral Ecology models (and strategies and operations arising from these models) is the *Laudato si'* Action Platform (LSAP) launched in May 2021 (Vatican News, 2021). Key elements of this initiative include: targeted goals (responding to the cry of the Earth/Poor, ecological economics, adoption of sustainable lifestyles, ecological education/spirituality, and community resilience), targeted audience (open to all, including individuals, parishes, dioceses, educational institutions, healthcare facilities, and religious communities), action-oriented framework (participants develop annual, customized *Laudato si'* plans using tools provided by the platform to monitor progress and receive certification), and seven-year journey (the initiative is designed as a long-term, transformative journey, emphasizing a “conversion” rather than a simple checklist, encouraging stakeholders to embrace a new relationship with creation). Unlike secular systems that may reject green initiatives without a clear Return on Investment (ROI), hospitals committed to LSAP are more likely to approve “mission-driven” expenses (Dicastery for the Promotion of Integral Human Development, 2026).

HGS which is an integral component of LSAP strategies and operations, can be seen as an instrument, an internal management roadmap. It is the specific set of policies, energy audits like the “WE ACT” (Waste, Energy/water, Agriculture/food, Chemicals, and Transportation) framework, which provides a standardized lens for identifying significant emission sources within hospital environments (Schenk, 2019).

HGS unifies environmental stewardship, social equity, and ethical governance to transform medical facilities from “medical factories” into a “Common Home” (Pope Francis, 2015; Grzymała-Kazłowski, 2024).

HGS directly disrupts the “throwaway culture” (Pope Francis, 2015). Operations emphasize circular economy principles, such as the third-party reprocessing of medical devices like catheters and pulse oximeters, which can reduce supply chain carbon footprints by 50% (MacNeill et al., 2020; Magasich-Airola et al., 2024).

Hospital Green Strategy in *Laudato si'* unifies the rigorous energy analytics of modern ESG with a spiritual mandate of care, creating

a “Hospital of the 21st Century” that transitions from a Master of Resources to a caregiver of the environment (Pope Francis, 2015; Grzymała-Kazłowski, 2024; Schwab et al., 2025).

Regarding patient satisfaction, LSAP hospital strategy opts for relational excellence with focus on empathy, spiritual well-being, and nursing communication. It centers on healing environments and human dignity (Grzymała-Kazłowski, 2024).

One may conclude that the relationship between a Hospital Green Strategy and a Green Hospital Strategy is essentially the difference between the vehicle and the destination (see Table 1). If a Green Hospital Strategy is the “what” (the dream of a hospital that doesn’t hurt the planet), then a Hospital Green Strategy is the “how” (the hard work of the Chief Financial Officer and the Facilities Manager). You cannot have a legitimate “Green Hospital” without a rigorous, data-driven “Green Strategy” to get you there.

Table 1. Hierarchical and functional differences between Green Hospital Strategy and Hospital Green Strategy

Feature	Green Hospital Strategy	Hospital Green Strategy
Nature	Strategic goal/vision	Operational plan/instrument
Scope	Industry-wide standards	Institutional specificities
Focus	The definition of a green facility	The execution of greening a facility
End State	Being a “Green Hospital”	Having an active “Green Strategy”

Source: Grzymała-Kazłowski, 2024; Magasich-Airola et al., 2024; Pope Francis, 2015.

In conclusion: secular Green Hospital Strategy and Hospital Green Strategy (rooted in *Laudato si’* and constituting its ecological model) have similar goals, but differ in detail in respect to core philosophy, primary drives, focus, energy strategy, patient satisfaction, strategic path, design approach, and healing concept as indicated in Table 2.

Having answered the first research question: *To what extent Laudato si’ ecological models differ from secular ESG models?* one may move to the second: *What is empirical evidence of the outcomes of the implementation of Laudato si’ ecological models in hospitals as compared to secular ESG models?*

The Impact of *Laudato si'* on Hospital Sustainability Strategies

Table 2. Comparison of secular and *Laudato si'* healthcare frameworks

Feature	Secular Green Hospital Strategy*	Laudato si' (LS) ecological model**
Core Philosophy	Triple Bottom Line (TBL): Balances economic, social, and environmental interests for risk mitigation.	Integral Ecology: Interdependence between humans and nature; the hospital as a "common home".
Primary Driver	Metric-Driven ROI: Reducing costs and complying with regulatory carbon mandates (avoiding carbon taxes).	Moral Imperative: Responding to the "Cry of the Earth" and the "Cry of the Poor" as a religious mission.
Waste Focus	Efficiency: Diverting waste to meet recycling targets and reducing disposal fees.	Anti-Throwaway Culture: Re-evaluating the necessity of single-use items based on the principle of sufficiency.
Energy Strategy	Decarbonization: Switching to renewables to future-proof against upcoming carbon taxes.	Solidarity: Reducing energy use specifically to mitigate climate impacts on the global poor.
Patient Satisfaction	Technical Excellence: Focus on HCAHPS scores regarding cleanliness and lighting.	Relational Excellence: Focus on empathy, spiritual well-being, and nurse communication.
Strategic Path	Top-Down & Standardized: Foundation for protocols within and across hospital networks.	Participatory & Mission-Led: Combines top-down goals with bottom-up "Ecological Conversion" of staff.
Design Approach	Sustainable Building: Focus on LEED/BREEAM certifications and energy performance.	Healing Environment: Biophilic design used as a "Spiritual Sanctuary" to restore human dignity.
Healing Concept	Technical Excellence: Focus on physical comfort and lighting.	Spiritual Sanctuaries: Biophilic design used as a means of restoring human dignity.

*Secular Green Hospital Strategy is represented by NHS and Kaiser Permanente.

**LS ecological model is represented by Providence and Mater Health.

Source: Abdulai & Im, 2025; Grzymała-Kazłowski, 2024; Ibrahim et al., 2025; Magasich-Airola et al., 2024; Pope Francis, 2015; Providence Environmental Stewardship, 2024; Rodríguez et al., 2021; Sadatsafavi et al., 2014; Schwab et al., 2025; Tir & Aggoun, 2025; van Schie 2024.

LAUDATO SI' ECOLOGICAL MODELS AND SECULAR ESG MODELS OUTCOMES

Despite their considerable contribution to ecological harm (as indicated in the Introduction), publications on hospitals' policies and practices regarding various aspects of sustainable development remain rare. Such scarcity refers first of all to empirical evidence of the outcomes of the implementation of *Laudato si'* Integral Ecology models and secular ESG models.

Based on the empirical findings and strategic frameworks, Table 3 compares the outcomes of implementing *Laudato si'* (LSAP) Integral Ecology models versus secular ESG models in hospital settings in respect to selected fields of hospitals operations: patient satisfaction (measured in HCAHPS scores), operational persistence, staff morale and retention, clinical co-benefits, financial savings, supply chain impact, waste and resource efficiency, and energy and water operational expenditure.

Table 3. Comparison of Empirical Outcomes: *Laudato si'* Integral Ecology vs. Secular ESG Models

Outcome Metric	Secular ESG / Green Hospital Models	Laudato si' (LSAP) / Integral Ecology Models
Patient Satisfaction (HCAHPS)	+4.7% above national average for overall hospital ratings	+5.2% above national average for overall ratings; +1.5% advantage in nurse communication
Operational Persistence	Sustainability often viewed as a complementary cost; programs are vulnerable to cuts during economic downturns	Acts as an "Operational Buffer"; programs persist during crises as sustainability is part of the clinical bottom line
Staff Morale & Retention	Focus on operational efficiency; improvements in physical environment (air/noise) but less impact on human interaction	Lower burnout and higher "patient-centered leadership" scores due to the "Halo Effect" of mission-alignment
Clinical Co-benefits	8.5% shorter hospitalization times and 22% reduction in analgesic medication through biophilic design	Similar recovery gains, but gardens are framed as "Spiritual Sanctuaries," leading to higher spiritual well-being scores
Financial Savings	Estimated annual savings of \$ 10-12 million for a 250-bed facility by reducing length of stay (LOS) by 0.8 days	~\$1,610 saved per patient episode; higher daily food costs (+56%) are offset by a 15% reduction in LOS
Supply Chain Impact	Risk Mitigation: Focuses on ensuring vendors do not negatively impact the brand's ESG score	Justice: Audits vendors for fair wages and ecological impact on marginalized communities in "sacrifice zones"
Waste & Resource Efficiency	30% reduction in medical waste through improved segregation and recycling protocols	50% reduction in supply chain footprint via third-party reprocessing of single-use medical devices
Energy & Water Operational Expenditure (OpEx)	Focus on decarbonization to future-proof against carbon taxes and energy price spikes	60% direct reduction in OpEx through deep structural audits and renewable transitions

Source: Cormio et al., 2026; NHS England, 2025; MacNeill et al., 2020; Maden & Kerse, 2026; Providence Environmental Stewardship, 2024; Rodríguez et al., 2021; Sadatsafavi et al., 2014.

Although all the figures presented in Table 3 should be interpreted with necessary care due to the lack of rigorously implemented common methodology, one may maintain that growing body of empirical literature suggests that hospitals adopting the *Laudato si'* – inspired Integral Ecology models tend to demonstrate broader and more interlinked sustainability outcomes than institutions guided solely by secular ecological frameworks. While secular models often prioritize environmental performance indicators such as carbon reduction, waste minimization, and energy efficiency, studies grounded in *Laudato si'* emphasize a holistic integration of environmental, social, ethical, and spiritual dimensions. For example, research on integral ecology highlights that Catholic institutions implementing *Laudato si'* principles frequently embed ecological practices within organizational culture, staff formation, and community engagement, resulting in more sustained behavioral change and stronger alignment between environmental goals and social justice commitments (Ludescher Imanaka et al., 2017). Empirical analyses also show that *Laudato si'* – inspired frameworks foster cross-sector collaboration and moral motivation, which can enhance long-term ecological performance beyond what is typically observed in secular models focused primarily on technical or regulatory compliance (Messias, 2024). Although direct comparative hospital-level studies remain limited, emerging evidence from Catholic research networks suggests that integral ecology approaches may yield more comprehensive outcomes by addressing structural, ethical, and relational factors often overlooked in secular sustainability paradigms (Landrigan et al., 2024).

CONCLUSIONS

Healthcare sector in general and hospitals in particular are under-represented in the literature on sustainability as compared to other sectors. It is despite its social, political, and economic gravity on the one hand, and considerable environmental harm it causes on the other. In normative sense and in qualitative studies, the *Laudato si'* – inspired Integral Ecology model possesses several advantages over secular ESG models. Also limited quantitative research studies (empirical studies) show a slight advantage of LSAP models over secular

ones in achieving sustainable development goals such as financial resilience, clinical recovery, and organizational stability of hospitals. Therefore, we can recommend expanding and deepening research into the effects of using pro-ecological models both in hospitals and in the entire health sector.

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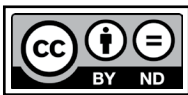
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