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ORIGINAL

The Role of Healthcare Managers in Implementing Environmental Sustainability Initiatives

El papel de los gestores sanitarios en la aplicación de iniciativas de sostenibilidad medioambiental

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ABSTRACT

Introduction: the innovation included a new health leadership model in a post-acute care setting, which was fine-tuned to improve quality of life. It gave access to much critique but needed new surgical challenges in leadership strategies to perfect patient outcomes and service delivery.
Method: the researcher used a mixed-method design, utilizing quantitative surveys as well as qualitative interviews with various healthcare professionals within post-acute care settings. Researchers reviewed data from 150 residents to assess how leadership models had affected care quality and employee satisfaction. Transformational, transactional, and servant leadership were among the leadership models considered.
Results: the findings showed that transformational leadership models dramatically improved the quality of life for people receiving care in post-acute settings. Facilities that followed this model scored higher on patient satisfaction and had better overall (health) outcomes than those following transactional and servant leadership models. Staff in transformational leadership settings also experience higher job satisfaction and lower burnout rates.
Conclusions: transformational leadership is the most effective model — This study proves that transformational leadership supports a better environment for both patients and staff in post-acute care settings. Transformational leadership can improve patient care and job satisfaction among healthcare workers by prioritizing empathy, communication, and empowerment. Based on the study's findings, the researchers recommended the implementation of transformational leadership development programs to promote these skills among contemporary and emerging healthcare leaders to improve the quality of life in post-acute care settings.

Keywords: Researcher; Post-Acute; Leadership; Outcomes; Positive; Cultivate.

RESUMEN

Introducción: la innovación incluía un nuevo modelo de liderazgo sanitario en un entorno de cuidados posagudos, que se puso a punto para mejorar la calidad de vida. Aportó muchas críticas, pero necesitó nuevos retos quirúrgicos en las estrategias de liderazgo para perfeccionar los resultados de los pacientes y la prestación de servicios.

Método: el investigador utilizó un diseño de métodos mixtos, empleando encuestas cuantitativas y entrevistas cualitativas con diversos profesionales sanitarios de entornos de cuidados posagudos. Los investigadores revisaron los datos de 150 residentes para evaluar cómo los modelos de liderazgo habían afectado a la calidad de la atención y a la satisfacción de los empleados. Entre los modelos de liderazgo considerados figuraban el transformacional, el transaccional y el de servicio.
Resultados: los resultados mostraron que los modelos de liderazgo transformacional mejoraban notablemente la calidad de vida de las personas atendidas en centros de cuidados posagudos. Los centros que siguieron este modelo obtuvieron mejores puntuaciones en satisfacción de los pacientes y mejores resultados generales (de salud) que los que siguieron los modelos de liderazgo transaccional y de servicio. El personal de los centros con liderazgo transformacional también experimenta una mayor satisfacción laboral y menores tasas de agotamiento.
Conclusiones: el liderazgo transformacional es el modelo más eficaz - Este estudio demuestra que el liderazgo transformacional favorece un entorno mejor tanto para los pacientes como para el personal en los entornos de cuidados posagudos. El liderazgo transformacional puede mejorar la atención al paciente y la satisfacción laboral del personal sanitario al dar prioridad a la empatía, la comunicación y la capacitación. Basándose en las conclusiones del estudio, los investigadores recomiendan la implantación de programas de desarrollo del liderazgo transformacional para promover estas habilidades entre los líderes sanitarios actuales y emergentes, con el fin de mejorar la calidad de vida en los entornos de cuidados posagudos.

Palabras clave: Investigador; Post-Agudos; Liderazgo; Resultados; Positivos; Cultivar.

INTRODUCTION

Healthcare managers can be at the forefront of driving their organizations toward more sustainable and eco-friendly practices. They are stewards of health institutions and uniquely positioned to ensure that the operations of healthcare systems align with environmental sustainability initiatives to improve both human health and planetary health.[1] One such opportunity is in the healthcare sector, where healthcare managers play a leading role in reducing the ecological footprint of their institutions. That is minimizing waste, using energy and sourcing materials responsibly wherever possible. Adopting green practices such as energy-efficient lighting, water-saving technologies, and serious recycling efforts can help managers quickly reduce environmental impact while also improving the bottom line.[2] Procurement Managers– as the authority when deciding to buy, procurement managers prefer suppliers and products complying with sustainable practices.

Furthermore, these managers will need to create sustainability programs and integrate them into the infrastructure of their healthcare organization.[3] They do this by educating and motivating employees at all levels to engage in sustainability efforts.[4] Tactics include training[5] raising awareness around a vision of sustainability, and implementing green teams that can lead and sustain sustainability initiatives. Healthcare managers are strategically positioned to form partnerships and collaborate with external stakeholders (e.g., local government, non-profit organizations and other healthcare providers) to achieve broader sustainability aims.[6] They can replicate initiatives such as community health programs that cover environmental health or be involved in regional waste reduction activities to maximize the positive environmental and health benefits. Health managers definitely have a pivotal role in this transformation towards sustainability in health care.[7] By implementing strategic action and leadership, they improve the operational functions and reputation of their institutions and make a significant contribution to the international community's efforts to achieve environmental sustainability.[8] Environmental sustainability initiatives in health care organizations Review of literature on environmental sustainability in health care settings group Detective series on the state of the environment in health care group system managers: The case for change They develop plans and strategies to minimize the environmental impact of the healthcare facilities while ensuring patient safety and the quality of care provided.[9] This includes the implementation of energy-efficient technologies, waste reduction initiatives, and sustainable procurement practices.[10] The Main Contribution of paper has the following:

- Environmental sustainability can significantly contribute to the success of health organizations. This should start with them driving strategic planning to include sustainability goals in the larger organizational agenda. These include creating policies that encourage resource conservation and reduce waste, thus decreasing the environmental footprint of healthcare facilities.
- It is the responsibility of healthcare managers to create an atmosphere of sustainability throughout the organization.
- They use metrics and key performance indicators to track progress and hold each other accountable. Transparent reporting on sustainability efforts allows managers to showcase the success of sustainability investments, help identify best practices, and build support for current and future initiatives from all

stakeholders by demonstrating tangible results that impact their interests, all while creating a more sustainable healthcare sector.

The remaining part of the research has the following chapters. Chapter 2 describes the recent works related to the research. Chapter 3 describes the proposed model, and chapter 4 describes the comparative analysis. Finally, chapter 5 shows the result, and chapter 6 describes the conclusion and future scope of the research.

METHOD

Table 1. Comparative Analysis of Existing Models

Author	Year	Advantage	Limitation
Mangla,S. K.,et,al.	2018	Enablers foster collaboration across stakeholders, improving resource efficiency and innovation, leading to more sustainable agri-food supply chains.	One limitation is the lack of standardized regulations across regions, making it challenging to consistently enforce sustainable practices globally.
Fawehinmi, O.,et,al.	2020	An advantage is promoting sustainable practices and awareness among academics, leading to environmentally responsible research and teaching initiatives.	A limitation is potential bias in self-reported data, affecting the accuracy of measuring academics' green behavior and attitudes.
Malik,S. Y.,et,al.	2020	Pathways towards sustainability enhance organizational reputation, foster innovation, and improve employee engagement through green HR practices and intellectual capital.	A limitation is the potential overemphasis on green practices, possibly neglecting other essential business aspects like financial performance or innovation.
Bombiak, E.,et,al.	2018	Green HRM helps Polish young companies enhance sustainability by promoting eco-friendly practices, reducing waste, and attracting environmentally-conscious talent.	Limited resources and expertise in young Polish companies can hamper the effective implementation of Green HRM for sustainable development.
Amrutha, V.,et,al.	2020	A systematic review identifies best practices in green HRM, promoting eco-friendly policies, boosting social sustainability and organizational responsibility.	The review may lack empirical data, relying heavily on existing literature, which could limit its practical applicability and insights.
Martins,V.W. B.,et,al.	2019	Knowledge management enhances resource efficiency and innovation, supporting sustainable practices and offering opportunities for future interdisciplinary research.	One limitation is the lack of integration between sustainability practices and existing knowledge management systems, hindering effective implementation.
Amankwah-Amoah, J.,et,al.	2020	The article highlights increased sustainability awareness, prompting airlines to adopt greener practices and technologies, enhancing environmental sustainability efforts globally.	The study may overlook rapid technological advancements in reducing airline emissions, focusing instead on policy challenges for sustainability improvements.
Gupta, H.,et,al.	2018	Integrating BWM and Fuzzy TOPSIS enables comprehensive, precise evaluation by balancing multiple criteria and accommodating uncertainty in GHRM assessments.	One limitation is the subjective nature of expert judgments, which can introduce bias and affect the consistency of results.
Khuntia, J.,et,al.	2018	Enhances efficiency by integrating eco-friendly practices with technology, promoting sustainable growth and reducing environmental impact in emerging economies.	A limitation is the potential inability to generalize findings to developed economies due to differing technological and economic contexts.
Stahl, G. K.,et,al.	2020	Enhancing HR's role in corporate sustainability fosters a positive workplace culture, aligning diverse stakeholder interests for long-term social responsibility.	It may lack practical implementation strategies, making it challenging for HR professionals to operationalize sustainability and responsibility initiatives effectively.

Discussed that sustainable practices in agri-food supply chains are fostered by innovation in technology, supporting policies, partnership working and consumer awareness. Such attributes promote resource efficiency, reduce waste and improve transparency. Conducting research and development, engaging with stakeholders, and running educational campaigns further contribute to the ability to implement and maintain eco-friendly practices effectively. So, this research aims to investigate the relationships between all potential influences on academic eco-friendly behaviors like green human resource management (GHRM) and environmental knowledge. It emphasizes the role of sustainable HR practices and sustainability awareness in promoting eco-centric behavior and environmentally friendly practices among academic faculty and staff in educational systems. The

Prospect of Green Intellectual Capital Integrated with Pathways Towards Organizational Sustainability. In line with this, several previous studies can empirically prove the contribution of GHRM to fostering environmental awareness and behavioral sustainability. Unlike the intangible motives of the intangible leverage of sweat, which goes in a circle, the intellectual capital of green drives innovation and strategy, so it will definitely lead to the sustainability of the organization in the market. Good Human Resource Management consists of incorporating environmental issues into one or more HR practices to achieve and promote sustainability. Benefits of GHRM for New Companies In Poland New Companies in Poland need to adopt GHRM in order to minimize their environmental footprint, foster Eco-sensitive cultures, and promote more streamlined and efficient operations. They connect business interests with sustainable development objectives in this manner. It also helps attract eco-conscious talent. Indeed, the role of GHRM practices has been addressed in the literature, to which GHRM practices contribute to enhancing social sustainability. It provides a detailed overview of the need for green goals as part of the HR strategy and its impact on employees, organizational culture and corporate social responsibility, resulting in sustainable development and socially responsible operating businesses.

This ensures a holistic approach to sustainability in organizations, where knowledge management plays a crucial role in capturing, sharing, and utilizing institutional knowledge for sustainable development. Studies focus on the integration of environmental, social and economic aspects. Looking ahead, more research is needed into the use of digital tools, cross-sector collaboration and the potential for metrics to measure the impact of knowledge on sustainable development goals. The COVID-19 pandemic has had a significant effect on the global aviation industry, resulting in new environmental sustainability dilemmas. As airlines bounce back, they need to "step up" integrating sustainable tactics into their operations and "step out," meaning that carriers should be quick to implement and adapt to rules and shifts in demand toward more sustainable fare options. Have discussed that due to GHRM practices, assessing organizational performance through Green Human Resource Management (GHRM) practices involves evaluating sustainable HR initiatives. The Best-Worst Method (BWM). On the other hand, Fuzzy TOPSIS ranks organizations based on their deviation from the ideal solution. Thus, it is well-suited for providing a more holistic, systematic method of measuring environmentally-friendly performance among firms. The study has focused on the way information technology plays a vital role in sustainable development in emerging economies. IT solutions also improve resource efficiency, minimize environmental impact, and facilitate sustainability practices. The integration of digital tools provides opportunities for energy efficiency and waste reduction and facilitates positive impacts toward sustainable development in these economies. Stahl, G. K., et al. Other authors have taken the same approach, focusing on how they can work to meet sustainability and social responsibility goals in relation to HRM by embracing diversity and multiple dimensions. It seeks synergies between responsible HR practices and ethical, environmental, and social considerations, promoting a culture of responsibility.

DEVELOPMENT

The Role of Healthcare Management in Implementing Environmental Sustainability Initiatives Healthcare managers can play a central role in promoting sustainable practices in health organizations by incorporating environmental objectives into the delivery of health services. The model postulates that healthcare managers should perform thorough assessments early on to determine how ecological impacts can be mitigated by targeting reduction efforts (e.g., energy, waste and resource use). A need for strategic planning, during which managers define clear, measurable sustainability objectives linked to the goals of the organization. It is also essential to shift towards promoting a culture of sustainability in which staff, patients, and external actors are all engaged. Edification and training programs can provide employees with the insights and capabilities essential to proceed with sustainable practices viably. This involves transitioning to renewable energy sources, digitizing records to cut down on paper use, and encouraging telemedicine to lower carbon footprints. Sustainable management is a broad approach consisting of the following factors, which aim to balance environmental, economic, and social goals. The key is to make the best use of resources without causing much harm to the ecosystem. One of the most vital aspects is environmental communication, which enhances understanding and incites action directed toward sustainability targets. That can include rigorous transparency in its acts, engaging with stakeholders and advocating for responsible policies and investments. Figure 1 shows that the Development Model.

Hospitals operate through waste and energy consumption, both of which lead to pollution. Management strategies include waste segregation, hazardous material management, recycling promotion, etc. Resource conservation programs through technology and process improvements reduce healthcare facilities' carbon footprint (in terms of watering and energy consumption). With water recycling, it will treat and reuse water in the facility so that freshwater is consumed less. It includes greywater systems and rainwater harvesting. An energy conservation plan is executed that optimizes the expenditure of sustainability in terms of energy by using energy-saving machinery, natural energy harvesters, and eco-friendly edifices. Sustainable practices for the patient room weave in green construction and systems thinking for sustainable room design. This encompasses eco-friendly building materials, energy-efficient lighting, and ventilation systems that promote

indoor air quality and minimize the environmental footprint, thereby contributing to improved patient health outcomes and operational efficiency. The implementation of the above green management initiatives in the healthcare system can have a significant role in the transformation to a green healthcare system, which is the core responsibility of healthcare managers.

Figure 1. Development Model

RESULTS AND DISCUSSION

The implementation of the above green management initiatives in the healthcare system can have a significant role in the transformation to a green healthcare system, which is the core responsibility of healthcare managers. This could be through strategic planning, resource allocation, and organizational leadership, which are evident in the result and discussion section. Biased towards working with healthcare managers, the general findings tend to be that it is these managers who are the key to setting and actively pursuing an agenda for sustainable practice by embedding environmental goals in the broader business strategy. You can see this in their initiatives in waste reduction, energy efficiency, and green procurement. Also, the results may vary among those who adopt different managerial commitments, have various levels of resources available or receive other levels of institutional support. These results may be discussed by highlighting the difficulties and opportunities offered to healthcare managers. Examples of barriers discussed could include issues like limited funding, reluctance to utilize more sustainable technologies, or lack of regulation, which contrasts with the rising knowledge and growing availability of sustainable systems. Additionally, it might assess the influence of such initiatives on patient outcomes, staff morale, and the organization's image within the community.

Energy Efficiency Management

Healthcare management is the practical application of energy efficiency projects in the facilities where we are cared for. By managing the deployment of energy-efficient lighting, heating, and cooling systems, managers can significantly reduce electricity consumption and funding expenses. Figure 2 shows the Computation of Energy Efficiency Management.

Table 2. Energy Efficiency Management

No. of Inputs	Comparison Models				
	TGP	HRM	MTM	MSL	Proposed Model
20	35,1	42,5	77,3	50,9	63,7
30	59,2	87,8	30,4	71,6	46,3
40	80,5	39,7	53,2	68,4	75,0
50	44,1	56,9	61,8	90,1	33,5
60	66,7	83,2	41,6	74,9	52,4

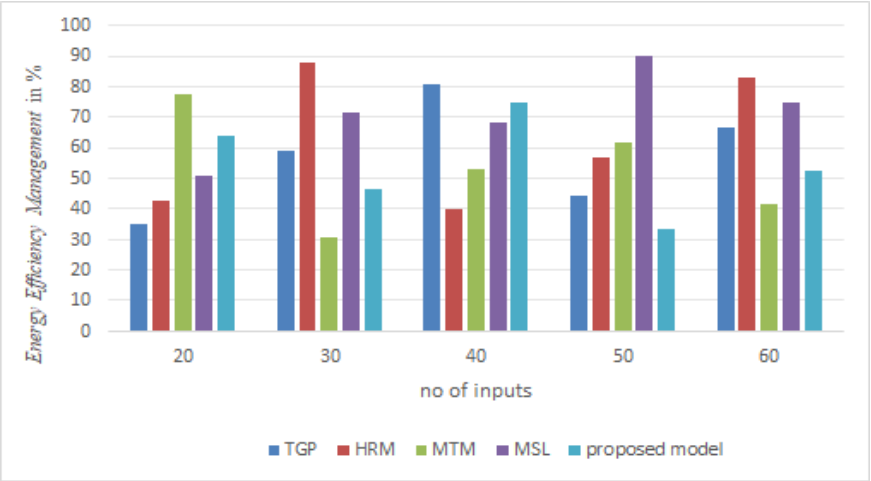

Figure 2. Computation of Energy Efficiency Management

This includes conducting energy audits and collaborating with facility engineers to identify and correct inefficiencies. It also ensures that sustainability objectives are tied to the institution's bottom line.

Waste Reduction Strategies

Another crucial element of context for healthcare executives is to carry out the required corrective regeneration of waste reduction. Managers should implement programs that limit waste in hospitals and aid in recycling. Figure 3 shows the Computation of Waste Reduction Strategies.

Table 3. Waste Reduction Strategies

No. of Inputs	Comparison Models				
	TGP	HRM	MTM	MSL	Proposed Model
40	37,4	58,1	76,5	42,8	50,2
50	65,7	71,3	31,4	85,0	40,9
60	55,6	44,3	79,2	63,5	38,7
70	48,2	82,7	60,4	33,1	72,9
80	54,1	68,5	35,6	88,0	47,3

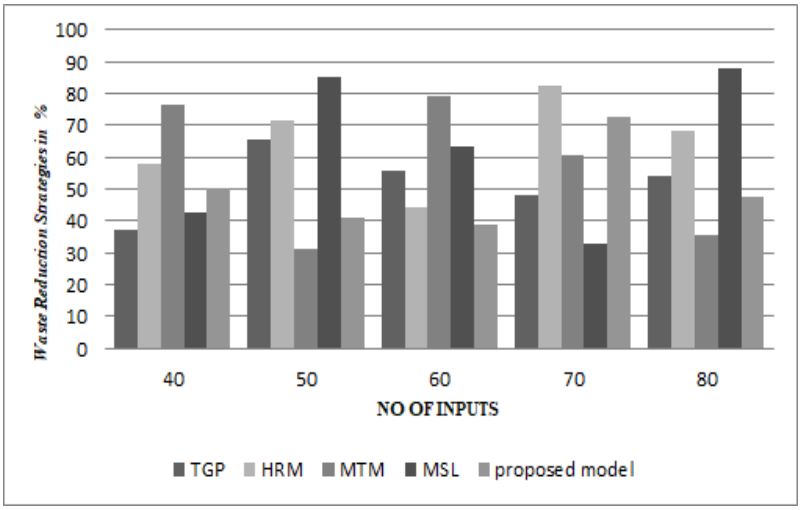

Figure 3. Computation of Waste Reduction Strategies

This includes training staff on the need for segregation and proper disposal, as well as investing in reusable materials and equipment. Waste management is a critical element of environmental sustainability, patient safety, and regulatory compliance.

Sustainable Supply Chain Management

Healthcare managers should undertake the management of sustainable supply chain practices for green performance. This entails bargaining with vendors to source green and sustainable goods and materials. Figure 4 shows the Computation of Sustainable Supply Chain Management.

Table 4. Sustainable Supply Chain Management

No. of Inputs	Comparison Models				
	TGP	HRM	MTM	MSL	Proposed Model
50	33,8	45,7	65,4	52,1	84,9
60	41,3	73,8	79,5	34,2	60,1
70	70,2	55,8	83,1	38,4	47,9
80	58,4	64,6	48,7	88,9	37,1
90	76,1	43,5	56,2	72,4	53

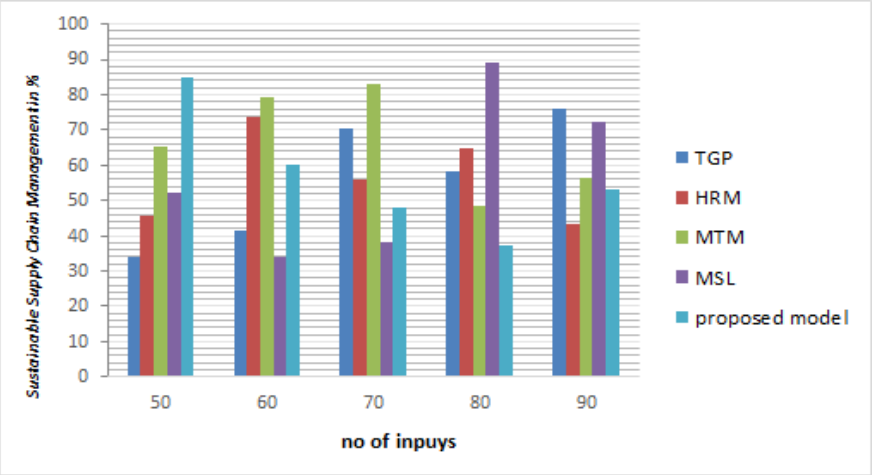

Figure 4. Shows the Computation of Sustainable Supply Chain Management

In logistics, managers should reduce carbon footprints by optimizing transportation and promoting local procurement of goods. These initiatives can help healthcare facilities reduce their environmental footprint significantly while still providing high-quality patient care.

CONCLUSIONS

Healthcare managers are increasingly focusing on the integration of environmental sustainability into the day-to-day practices of healthcare. Your role as a manager of healthcare management holds a vital role in changing the paperless or green aspects of things that preserve the environment, giving you new initiatives that can decrease the operational process and improve public health at the same time. Due to their high energy use, waste production and consumption of non-renewable resources, healthcare institutions are a significant cause of the degradation of the environment. As the leaders of sustainability initiatives, managers can help tremendously reduce many of these impacts. Healthcare managers have to do their part by conducting thorough assessments of the environmental footprints of their institutions as a prerequisite for the successful implementation of these initiatives. This includes scrutinizing energy consumption, waste disposal strategies, and resource utilization. Institutionalize dynamic continuous-assessment procedures to adjust managers to systems-level impact and theoretical strategies over time through iterative assessments. To effectively realize these initiatives, it is vital to promote a culture of sustainability within the organization. Managers need to motivate and educate all levels of staff to put sustainable practices into their daily work. The more significant challenge is leadership inspiring people through clear communication and ongoing education on using sustainable systems. Additionally, healthcare managers need to partner with stakeholders such as policymakers, suppliers, and community organizations to harmonize sustainability goals with broader ecosystem objectives. Engaging stakeholders enables managers to contribute expertise and resources outside of their focus areas, increasing the effectiveness of their efforts. Healthcare managers are crucial for greening the healthcare system. By developing a strategic plan, changing the organization, and working with stakeholders, they can push for greener practices and policies to make healthcare systems more sustainable, which will lead to a healthier community and another step forward in the path of a better world.

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CONFLICT OF INTEREST

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