

Sustainability in operating rooms: Awareness among health professionals

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ABSTRACT

Awareness of sustainability in surgical centers is crucial due to the significant environmental impact of these environments. Healthcare professionals, such as surgeons and anesthesiologists, are encouraged to adopt sustainable practices, such as waste reduction and resource optimization. Despite the willingness to change, barriers such as a lack of education and institutional support hinder the effective implementation of sustainable initiatives. Educational programs are key to training future leaders in environmental stewardship in surgery, promoting a greener practice and awareness of global climate challenges.

Keywords: Sustainability, Surgical centers, Health professionals, Environmental impact, Sustainable practices.

INTRODUCTION

Awareness of sustainability among professionals working in operating rooms has become a growing priority in recent years (WU; CERCEO, 2021). In a scenario where operating rooms are responsible for up to 30% of hospital waste, sustainable initiatives can significantly reduce the environmental impact of these centers, while promoting efficiency and cost savings.

As such, healthcare professionals and hospital decision-makers' perceptions of sustainability are key to implementing greener practices in operating rooms. Many professionals demonstrate a willingness to participate in sustainable initiatives, such as recycling, although they face barriers such as a lack of awareness and education, as well as inadequate support from institutions (GORGUN et al., 2023).

The environmental awareness of health professionals is also linked to the urgency of climate change, which has a disproportionate impact on vulnerable groups. Surgeons, anesthesiologists, and obstetricians are encouraged to lead efforts to improve environmental sustainability in operating rooms by promoting practices such as reducing the use of polluting anesthetic gases and optimizing energy and water consumption (YATES et al., 2021). Global surveys reveal that many surgeons are aware of the environmental impact of their practices and are willing to modify their approaches to improve sustainability. However, a lack of local and national guidance and support often impedes the implementation of sustainable practices (CUNHA, 2022).

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In this context, waste management in surgical settings, especially the use of disposable medical devices, presents significant environmental challenges. While these devices reduce the amount of regulated medical waste, they also pose a large-scale waste management problem, requiring effective logistical solutions (MAJERNÍK et al., 2021). Studies in France indicate that most anesthesiologists and nurse anesthetists are environmentally conscious and want to improve sustainable practices in their operating rooms. Sustainability education and training are identified as key barriers to wider adoption of these practices (TORDJMAN et al., 2022).

The attitude and behavior of perioperative professionals towards sustainability initiatives can also contribute to the implementation of long-term changes. Despite a drive to improve sustainability, few interventions have been adopted due to a lack of stakeholder engagement (GADI et al., 2023).

Educational initiatives, such as fellowship programs focused on sustainability in the operating room, can train future leaders in environmental stewardship by ensuring that future generations of surgeons are aware of the environmental impact of their practices (VACHARATHIT et al., 2021).

Sustainability in surgical practice is also driven by changes in clinical practice post-the COVID-19 pandemic, which has underscored the need for sustainable surgical services. An integrated approach, ranging from preoperative to effective follow-up, is essential for a greener surgical practice (ANASTASOPOULOS; PAPALLOIS, 2022).

Sustainable management of disposable surgical cover waste is also an area of focus, with studies indicating that the disposable form can significantly reduce the amount of regulated medical waste generated during surgical procedures (MAJERNÍK et al., 2021). In addition, practitioners' and the public's perceptions of sustainability in surgery show that both groups value sustainability, although there are differences in priorities. Insufficient education of healthcare professionals on sustainability is a contributing factor to the low adoption of sustainable practices (GADI et al., 2023).

In this line of thinking, educational programs that integrate sustainability into medical education curricula can increase awareness and knowledge about the climate crisis by creating a community of practice in healthcare sustainability (TEHERANI et al., 2023). On the other hand, the implementation of sustainable surgical practices in rural centers requires local awareness among health professionals about the importance of sustainability and the identification of barriers to sustainable practice (HO; NASEEM, 2023).

OBJECTIVE

The objective of this study is to describe in a narrative way the role of sustainability in raising awareness among professionals working in operating rooms.



METHODOLOGY

The methodology adopted to carry out this study was based on a literature review using the Virtual Health Library (VHL) and *Web of Science* databases. The search strategy applied to the databases included the terms "Sustainability OR Sustainability AND Education OR Education AND Health OR Health".

Data collection was carried out in March 2024, with no restrictions on the period of publication of the studies, in order not to limit the results. Original research articles, literature reviews, case studies, conference reports, and book chapters were considered in the review. The studies were described narratively throughout the text, highlighting the main findings regarding the importance of raising awareness among health professionals regarding sustainability in operating rooms.

DEVELOPMENT

Sustainability in operating rooms is an issue of increasing importance, reflecting the need for medical practices that not only preserve the health of patients but also protect the environment. Surgical centers, known for being resource-intensive and waste-intensive areas, represent a significant opportunity for the implementation of sustainable initiatives. This text explores the role of sustainability in raising awareness among health professionals working in these environments, highlighting the barriers faced and promising strategies to promote greener practices.

Surgical centers are responsible for a considerable proportion of hospital waste. It is estimated that up to 30% of the total waste generated by hospitals comes from these units. In addition, these environments consume large amounts of energy and water, exacerbating the environmental impact of WU health activities; CERCEO, 2021). In this context, the formation of green committees or teams within hospitals has proven to be an effective strategy to reduce the environmental footprint of surgical centers. These groups are responsible for implementing waste management practices, using reusable devices, and reducing energy and water consumption.

One of the main challenges faced in adopting sustainable practices in operating rooms is the lack of awareness and education of healthcare professionals. Studies show that while there is a widespread willingness to participate in green initiatives, there is often a lack of knowledge and institutional support for the implementation of these practices (GORGUN et al., 2023). For example, recycling and proper waste segregation are often mentioned as areas with great potential for improvement, but which face barriers due to a lack of proper training and insufficient infrastructure.

In this regard, continuing education is essential to sensitize health professionals about the importance of sustainability. Educational initiatives, such as sustainability-focused fellowship programs in operating rooms, have been successful in training leaders who are aware of the environmental impact of



their practices. These programs not only raise awareness but also empower professionals to implement meaningful changes in their work routines (VACHARATHIT et al., 2021).

Sustainable surgical practices are also driven by the need to address climate change. The emission of polluting anesthetic gases and the generation of large amounts of waste during surgical procedures are critical issues that require urgent solutions. The adoption of environmentally sustainable materials and practices, such as reducing the use of disposable devices and prioritizing renewable energy systems, are important steps to promote sustainability in healthcare (FILHO et al., 2023).

Studies conducted in France reveal that most anesthesiologists and nurse anesthetists are aware of the environmental impact of their practices and want to improve sustainability in operating rooms. However, a lack of institutional training and support remains a significant barrier to the wider adoption of these practices (TORDJMAN et al., 2022). To overcome these barriers, it is essential to provide ongoing training and create local focus groups that coordinate sustainable actions within hospitals.

In the UK surgical industry, for example, sustainable practices are seen as an essential part of quality care. Studies indicate that effective resource management, the acquisition of morally responsible surgical teams, and the integration of professional services are pillars for sustainability and quality in healthcare (MUBARAK, 2023). Also in the UK, dermatology professionals in the UK demonstrate a high awareness of the environmental impact of dermatologic surgery. The adoption of sustainable practices and the reduction of the use of disposable equipment are areas of interest, although there are challenges in discussing the effects of climate change with patients (ALI et al., 2023).

In Australia, the sustainability of health services requires careful planning of resources, both capital and non-capital, to maximise benefits and mitigate workforce attrition (CROUCH et al., 2022).

Considering the global scenario, it can be seen that awareness of sustainability among healthcare professionals is growing, but there are still significant challenges to the implementation of sustainable practices. Studies show that despite a drive to improve sustainability, few interventions have been adopted due to a lack of stakeholder engagement (GADI et al., 2023). It is essential that healthcare professionals are educated about the ecological impacts of their actions and encouraged to adopt practices that minimize waste and greenhouse gas emissions.

In the meantime, waste management in surgical settings, especially the use of disposable medical devices, poses a significant environmental challenge. While these devices reduce the amount of regulated medical waste, they also contribute to the accumulation of solid waste, necessitating more efficient waste management solutions (MAJERNÍK et al., 2021). Adopting reuse and recycling practices can help mitigate this issue.

Within this context, the "green surgery" approach also emerges, which involves the incorporation of environmentally friendly materials and practices that conserve energy, reduce waste, and minimize



greenhouse gas emissions, while ensuring high-quality patient care (FILHO et al., 2023). In this vein, the development of skills and exchange of knowledge among surgeons in different approaches can promote sustainable and cost-effective practices, especially in resource-limited settings (WALSH, 2014).

Given this scenario, it is understood that the future of sustainability in operating rooms depends on an integrated approach that considers all aspects of patient care, from preoperative to effective follow-up. Ongoing education and institutional support are essential to overcome barriers and implement lasting change towards a greener surgical practice. With the engagement and collaboration of all those involved, it is possible to promote a more sustainable surgical environment, ensuring the protection of the environment and the health of patients.

FINAL THOUGHTS

In conclusion, it is found that sustainability in health care is a shared responsibility, requiring the commitment of the entire patient care chain, from the adoption of new sterilization devices to the modernization of operating rooms. The implementation of sustainable practices can also be facilitated through partnerships between healthcare institutions and environmental organizations.

In fact, professionals working in operating rooms can contribute to driving a culture of sustainability in health systems by promoting ecological responsibility and improving patient care, health equity, and public health.

In conclusion, integrating sustainable practices into operating rooms not only reduces environmental impact but also promotes efficiency, cost reduction, and improves the quality of patient care. Ongoing education and institutional support are essential to overcome barriers and implement lasting change towards greener surgical practice.



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