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Conference Paper

Green Healthcare Accountability: A Comprehensive Review of Environmental Accounting in Hospitals

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ABSTRACT

This literature review aims to provide insights into the utilization of environmental accounting within the healthcare sector. The primary objective is to comprehensively analyze the prior study to understand the rationale, methodologies, and results associated with implementing environmental accounting practices within hospital settings. The research methodology employed in this evaluation encompassed a comprehensive analysis of the relevant scholarly literature. The literature review findings indicate that hospitals utilize environmental accounting methods for a range of purposes, such as ensuring adherence to regulatory requirements, achieving financial savings, enhancing their reputation, and fulfilling their social responsibilities. This paper also investigates the methodologies and tools commonly utilized in hospital settings for environmental accounting. These include carbon accounting, waste management accounting, energy consumption monitoring, and eco-efficiency analysis. This study investigates the impact of environmental accounting on hospitals' financial reports and decision-making processes. The use of environmental accounting practices can have a significant effect on the resource allocation, investment decisions, and long-term strategic planning of healthcare organizations. This literature analysis highlights the imperative for further research in this domain and underscores the increasing importance of environmental accounting within healthcare institutions. The findings underscore the significance of incorporating sustainability into the management practices of hospitals, indicating that implementing environmental accounting methods can substantially influence the financial and environmental performance of healthcare organizations

Keywords: Environmental accounting, hospital, literature review

Introduction

Environmental accounting is a branch of accounting science that focuses on managing the environmental impacts of an organization's operational activities. Corporate Social Responsibility is a form of accountability for reporting and disclosing costs related to the environment. According to Maulina and Nugraha, (2022), companies also need to create strategies that aim not only to achieve profitability but also to increase environmental awareness as a form of corporate responsibility towards the surrounding environment.

Sunaningsih (2020), which quotes from Nurhasanah, (2018), hospital waste refers to the entirety of waste materials generated via the provision of healthcare services and ancillary activities that support these services. Hospital activities generate three forms of waste: solid, gas, and liquid. Solid waste can be categorized into two main types, namely B3 and non-B3 solid waste. The escalation in medical

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waste can be attributed to many variables, including the rise in patient population, the surge in medical equipment utilization, and the upsurge in drug consumption. The COVID-19 epidemic has resulted in a substantial rise in medical waste generation inside hospital settings. The observed phenomenon can be attributed to the escalating prevalence of individuals afflicted with COVID-19, coupled with the heightened utilisation of medical apparatus and pharmaceutical interventions for the management of COVID-19 cases. The escalation of medical waste can exert detrimental effects on the environment. The improper disposal of medical waste has the potential to contaminate water sources, degrade air quality, and adversely impact soil composition. The contamination of water bodies due to the presence of medical waste has been identified as a significant contributor to the occurrence of gastrointestinal ailments such as diarrhoea, cholera, and hepatitis. The presence of medical waste in the atmosphere can lead to the development of respiratory conditions such as asthma, bronchitis, and cancer. The contamination of soil resulting from the improper disposal of medical waste has the potential to induce several adverse health effects, including skin illnesses, cancer, and ecological harm.

Environmental accountability is a type of accountability that pertains to the obligation of an organization towards the natural environment in its vicinity. The significance of this notion within the realm of health services is in its capacity to foster environmental responsibility among hospitals and other healthcare institutions, hence promoting more efficient and conscientious management of their operations to mitigate the associated environmental consequences. The potential outcome can result in enhanced service quality for patients. Fauzan, (2022) states that within the healthcare sector, environmental accountability measures can facilitate hospitals in enhancing resource management efficiency, minimizing waste generation, and embracing ecologically sustainable practices. Ensuring the viability of health services in the future is of paramount importance. Within the realm of healthcare, implementing environmental accountability can facilitate enhanced operational efficiency, foster responsibility for environmental consequences, and elevate the caliber of patient care within hospitals and other healthcare establishments. Ensuring the sustainability of health services in the future and aligning with government policies to reach national health goals are paramount.

The examination and exploration of research and literature on environmental accountability within the context of hospitals are crucial for comprehending and enhancing accountability practices within the healthcare domain. One example of pertinent research is a study conducted at the Salewangang Regional General Hospital in Maros. This study aimed to examine the accountability of health services at the Salewangang Regional General Hospital in Maros Regency by Andayani et al., (2020). The results of this study can provide a deeper understanding of the importance of accountability in the context of health services–research at the Brebes Regional General Hospital by Ningrum, (2021). The primary objective of this study is to assess the implementation of environmental accounting practices within the context of Brebes Regional General Hospital. Specifically, the study will utilize financial data from Brebes Regional Hospital for 2020. The findings of this study can offer valuable insights into the implementation of environmental accounting practices within hospital settings and their subsequent effects on environmental management.

The research conducted at the Salewangang Regional General Hospital, Maros, aims to analyze existing approaches to environmental accountability in hospitals. This research uses a qualitative approach with a phenomenological type Andayani et al., (2020). The results of this study provide a clear picture of the problems faced in environmental accountability practices in hospitals. Another study conducted at the Brebes Regional General Hospital aimed to analyze the application of environmental accounting, focusing on recognizing waste costs with hospital objects Ningrum (2021). The results of this study provide insight into environmental accounting practices in hospitals and their impact on environmental management. All these studies make an important contribution to understanding and improving hospital environmental accountability practices by analyzing existing approaches and identifying challenges and opportunities in managing environmental impacts generated by the healthcare sector.

Environmental accounting can help hospitals manage the environmental impacts of their operational activities. Environmental accounting can help hospitals to identify the environmental impacts of their operational activities, measure the environmental impacts of their operational activities, report the environmental impacts of their operational activities, and by implementing environmental accounting, hospitals can increase their awareness and commitment to sustainable environmental management.

Material and Methods

Harjanti and Widajantie (2021), quotes from Zulkarnaen and Fitriani (2020), a method is a way of working that can be used to obtain something. Meanwhile, research methods can be interpreted as procedures for working in the research process, both in searching for data and disclosing existing phenomena.

This research uses a qualitative descriptive study method. This research looked for various articles related to the implications of environmental accounting in hospitals. The first step that researchers need to do to obtain research objectives is to determine articles to discuss by looking for several articles that are relevant to the topic of discussion. The article that will be used is in the form of a journal. Journals that have been collected and are felt to be by the criteria for discussion topics will be used as the basis for the research, then a summary will be made, then an analysis of the discussion points contained in the research objectives and research findings will be carried out to become the basis for research that will be carried out in the future.

Table 1. articles that are material for literature reviews

No	Writer	Article Title	Research methods
1	Sánchez-de Prada et al. (2023)	Environmental factors are associated to hospital outcomes in COVID-19 patients during lockdown and post-lockdown in 2020: A nationwide study	National population-based retrospective study of 208,744 patients hospital-ized in Spain with COVID-19.
2	Tregidga and Laine (2022)	On crisis and emergency: Is it time to rethink long-term environmental ac-counting?	Critical Perspectives Essay
3	Cho et al. (2022)	"Sustainability at stake during COVID-19: Exploring the role of accounting in addressing environ-mental crises"	Critical Perspectives Essay

To be continued…

4	Kumar and Chaudhary (2021)	Environmental sustainability practices in hospitals of Bihar	Quantitative Evaluate hospital environmental performance on six dimensions
5	Maulina and Nugraha (2022)	"Effect of environmental management accounting practices on organizational performance: role of process innovation as a mediating variable"	Quantitative research using a questionnaire survey method.
6	Wang et al. (2019)	Exploring the effects of institutional pressures on the implementation of environmental management accounting: Do top management support and perceived benefits work?	Quantitative research using a questionnaire survey method.
7	Sunaningsih (2020)	Implementation of Green Accounting at the Muntilan Regional General Hospital, Magelang Regency	This research is qualitative research with a case study method.
8	Harjanti and Widajantie (2021)	Analysis of the Implementation of Environmental Accounting at Dr. Regional General Hospital. Mohammad Zyn Sampang (Case Study at Dr. Mohammad Zyn Sampang Regional General Hospital)	This research is qualitative research with a case study method.
9	Maulina and Nugraha (2022)	Analysis of Environmental Cost Calculations for Covid-19 Solid Waste Management in Achieving Eco-Efficiency (Case Study at Dr. Hasan Sadikin Hospital Bandung)	This research is qualitative research with emphasis on case studies at the Dr. RSUP service location. Hasan Sadikin Bandung
10	Ashari and Anggoro (2021)	How is the implementation of green accounting in public hospitals?	This research is quantitative descriptive research conducted using a survey method.

Results and Discussion

Aspect of the number of articles

Ten articles have been selected for literature review. Based on the year of publication, there is one article from 2018 titled "Exploring the effects of institutional pressures on the implementation of environmental management accounting: Do top management support and perceived benefit work?", and two articles from 2020 titled "Effect of environmental management accounting practices on organizational performance: role of process innovation as a mediating variable" and "Penerapan Green Accounting Pada Rumah Sakit Umum Daerah Muntilan Kabupaten Magelang", three articles from 2021 titled "Environmental sustainability practices in hospitals of Bihar", "Analisis Penerapan Akuntansi Lingkungan pada Rumah Sakit Umum Daerah Dr. Mohammad Zyn Sampang (Studi Kasus Pada Rumah Sakit Umum Daerah Dr. Mohammad Zyn Sampang)", and "How is the implementation of green accounting in a public hospital?", three articles from 2022 titled "On crisis and emergency: Is it time to rethink long-term environmental accounting?", "Sustainability at stake during COVID-19: Exploring the role of accounting in addressing environmental crises", and "Analisis Perhitungan Biaya Lingkungan atas Pengelolaan Limbah Padat Covid-19 dalam Mencapai Eco-Efficiency (Studi Kasus pada RSUP Dr. Hasan Sadikin Bandung)", and one article from 2023 titled "Environmental factors are associated to hospital outcomes in COVID-19 patients during lockdown and post-lockdown in 2020: A nationwide study".

Aspects of important findings in the article

Sánchez-de Prada et al. (2023) the study suggests that the effects of air pollutants, specifically PM2.5, PM10, NO2, and SO2, had a significant impact on the outcomes of COVID-19 during the period of lockdown, indicating that short-term exposure to these pollutants played a role in influencing the disease's progression. The presence of these pollutants is correlated with an increase in hospital admissions, fatalities among hospital patients, and admissions to intensive care units (ICUs). Notably, deaths occurring within ICUs are primarily linked to the presence of fine particulate matter (PM2.5) and coarse particulate matter (PM10). The study's findings underscore the need to monitor air pollution in the context of respiratory infectious illnesses.

Tregidga and Laine (2022) said that the environmental crisis is an urgent and emergency matter, currently, actions that have an impact on the crisis facing the environment are still being debated. The debate has become clearer considering the COVID-19 pandemic has provided a backdrop for contemplating the concept of crisis response and the potential trajectory of the environment during a post-COVID recovery. This paper initially provides an overview of the environmental crisis and the COVID-19 pandemic, emphasizing their critical nature and the need for immediate attention. Subsequently, the article shifts its focus towards examining the ramifications of these crises specifically in the context of environmental accounting. This article proposes the establishment of environmental accounting as a comprehensive accounting framework that incorporates long-term considerations.

Cho et al. (2022) said it reflects and provides insight into Exploring the environmental ramifications associated with the economic recovery following the COVID-19 pandemic. This article especially examines the correlation between the environment and the COVID-19 pandemic, with a particular focus on the interconnectedness of the natural world and the virus. Furthermore, there were multiple concerns expressed both the purported good and negative effects of the crisis on the environment in the context of crisis recovery. The author posits that the existing accounting and accountability procedures employed in economic stimulus programs, alongside conventional environmental accounting methodologies, are insufficient and constraining in their potential to facilitate enduring sustainable transformation.

Kumar and Chaudhary (2021) revealed The findings of the study indicate that the degree of adoption of sustainable practices in the selected hospitals was subpar. The study revealed that the category with the highest level of implementation was "resource conservation," followed by "managing hospital pollution," "patient room sustainability," and "energy conservation." The practice of 'sustainable management' is seen to have the lowest level of implementation, while 'environmental communication' and 'water recycling' are also reported to have somewhat limited adoption rates. This study aims to contribute to the limited knowledge base on the environmental sustainability of emerging cities worldwide by examining the adoption of environmentally friendly practices in resource-constrained states of India. Sari et al. (2020) revealed the findings. The adoption and integration of environmental management accounting practices yield favourable outcomes in terms of the organization's overall image and perception. The assertion is substantiated by the utilization of environmental management accounting, which fosters the adoption of innovative techniques aimed at enhancing organizational performance.

Wang et al. (2019) findings of the study indicate a positive and significant relationship between coercive pressure and normative pressure with the application of EMA. However, the influence of mimetic pressure on EMA implementation was found to be insignificant. Furthermore, this research also investigates the moderating influences of top management support and perceived advantages on the association between institutional pressure and environmental management accounting (EMA) adoption. The findings of the study indicate that the presence of support from top management or the perception of benefits has a positive moderating effect on the influence of coercive pressure or normative pressure on the implementation of environmental management accounting (EMA). However, it has a negative moderating effect on the influence of mimetic pressure on EMA implementation.

Sunaningsih (2020) shows that Muntilan Regional Hospital has not implemented the green accounting concept as a whole because it does not present environmental costs in special reports as additional voluntary information. Muntilan Regional Hospital has identified, acknowledged, measured, presented, and disclosed these costs in financial reports, namely as related costs to operational costs. Harjanti and Widajantie (2021) revealed that the Regional General Hospital dr. Mohammad Zyn Sampang has carried out optimal waste processing. However, they still do not implement environmental accounting properly.

Maulina and Nugraha (2022) show RSUP Dr. Hasan Sdikin has carried out waste management by standards so that the costs incurred by hospitals in managing their environment can be categorized as efficient because the percentage of environmental costs is 1.68% of the total hospital operational costs in 2021. This also affects environmental efficiency (eco-efficiency) which can be said to have been achieved by fulfilling all supporting factors in achieving eco-efficiency, especially the financial profit factor which ultimately achieves a good company image.

Ashari and Anggoro (2021) demonstrate green accounting practices The General Hospital in Malang Raya has implemented green accounting practices well and consistently in financial activities, social activities, and environmental activities. Several green accounting practices such as implementing green accounting as a first step to minimize the impact of environmental damage to increase the efficiency of environmental management, providing financial, social, and environmental accounting information that is integrated and relevant, reliable as well as evaluating environmental activities in terms of environmental costs and economic benefits as the purpose of applying environmental accounting concepts. By implementing green accounting practices, the General Hospital in Malang Raya can minimize the impact of environmental damage, increase environmental management efficiency, and provide integrated and relevant accounting information.

Conclusion

Multiple scholarly studies examining the intersection of the environment and hospitals elucidate various interconnected and unequivocal findings. The present study examines the influence of brief exposure to atmospheric contaminants, notably PM2.5, PM10, NO2, and SO2, on the outcomes of COVID-19 within healthcare facilities, including hospital admissions, in-hospital mortality rates, and intensive care unit (ICU) admissions. The results obtained from this study underscore the significance of conducting surveillance on atmospheric contaminants in the context of respiratory infectious ailments. The environmental crisis is a pressing and critical issue, and there is ongoing debate surrounding the acts that impact the environmental challenges at hand. The papers also emphasise the correlation between the environment and the COVID-19 catastrophe, along with the significance of achieving a lasting economic recovery in the aftermath of the pandemic. The utilization of environmental accounting has been found to have a favourable influence on the overall performance of organizations.

The current state of sustainable practices implementation in Indian hospitals remains subpar, notwithstanding the successful waste management and attainment of eco-efficiency by several hospitals in the country. Certain hospitals have yet to adopt the principles of green accounting and environmental accounting in their entirety, while others have effectively adopted waste management practices and attained eco-efficiency. The articles underscore the significance of monitoring air pollution in respiratory infectious diseases, emphasise the pressing nature of the environmental issue, and advocate for the adoption of sustainability and environmental accounting practices inside hospitals. The aforementioned studies claim that the adoption of environmental accounting practices has the potential to enhance organizational performance. Nevertheless, there are still certain healthcare facilities that have not yet implemented the practice of environmental accounting.

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