

BMJ Open Exploring employee green behaviour in hospital settings: a scoping review protocol

Heejin Lim ¹, Ja Kyung Seo ², Seung Eun Lee ^{3,4}

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¹College of Nursing, Yonsei University, Seodaemun-gu, Korea (the Republic of)

²Yonsei University, Seodaemun-gu, Korea (the Republic of)

³College of Nursing, Yonsei University, Seoul, Korea (the Republic of)

⁴Mo-Im Kim Nursing Research Institute, College of Nursing, Yonsei University, Seodaemun-gu, Korea (the Republic of)

Correspondence to

Dr Seung Eun Lee;
leese@yuhs.ac

ABSTRACT

Introduction Hospitals have been identified as one of the drivers accelerating climate change, and in response, they have recently been incorporating environmentally sustainable goals into their organisations. Given the significant role that healthcare workers play in pursuing hospitals' environmental goals through such actions as energy conservation and waste reduction, the scoping review is intended to comprehensively map and summarise the literature on these workers' green behaviours within hospital settings.

Methods and analysis The scoping review will follow Joanna Briggs Institute methodology and will report findings according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews checklist. A comprehensive search for relevant sources published from database inception through 31 January 2025 will be conducted across seven electronic databases (PubMed, Cumulative Index of Nursing and Allied Health Literature, Embase, Scopus, Web of Science, PsycINFO and Emerald Journals), using key terms such as "hospital," "healthcare workers" and "green behavior". We will include peer-reviewed journal articles focusing on healthcare workers' green behaviours in hospitals and relevant grey literature in order to provide an extensive review. Articles that are not written in English or that are intervention-based will be excluded. The study selection process will be presented in a flow diagram, and the text will summarise the findings of eligible studies according to key characteristics.

Ethics and dissemination The scoping review will not require ethical approval. The findings will be disseminated through publication in a peer-reviewed journal and conference presentation.

Trial registration number This protocol has been registered with the Open Science Framework (<https://doi.org/10.17605/OSF.IO/YU345>).

INTRODUCTION

In addressing environmental challenges, the healthcare sector is a critical area of concern.¹ Although hospitals deliver essential medical care, they also contribute substantially to environmental degradation. Globally, healthcare systems account for approximately 4.4% of carbon emissions¹ and generate significant waste such as hazardous and infectious materials through the care delivery process.^{2,3} Simultaneously, hospitals face increasing pressures as climate change exacerbates health

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This review will adhere to the Joanna Briggs Institute methodology and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist.
- ⇒ By including both peer-reviewed journal articles and grey literature, this review will capture a comprehensive range of evidence on hospital employees' green behaviours.
- ⇒ Variability in how green behaviour is defined and in the types of hospital professionals included across studies may complicate data synthesis and limit the generalisability of findings.
- ⇒ Limiting the review's scope to hospital settings may exclude relevant findings for other healthcare settings, such as nursing homes, that could inform hospital practices.
- ⇒ The review will be limited to English-language studies and will exclude hospital websites as a grey literature source, which may lead to the omission of relevant research and policy documents on hospital sustainability initiatives.

issues such as heat-related illnesses and the spread of infectious disease, heightening the demand for healthcare services and resources.⁴ This duality—both contributing to and being impacted by environmental challenges—underscores the urgency of adopting sustainable healthcare practices. Exploration of ways to reduce the environmental footprint of healthcare institutions has become an important area of research.

One key means of promoting sustainability in healthcare is fostering employee green behaviours, which refer to measurable pro-social actions by employees that contribute to environmental sustainability in the workplace.⁵ These behaviours can include simple, individual actions such as turning off equipment when not in use or properly disposing of waste as well as coordinated efforts to advocate for or participate in broader sustainability initiatives within the organisation.⁶ It is important to understand employee green behaviour because the success of organisational strategies for environmental sustainability partially depends on the responses

Table 1 Search string

Category	MeSH	Keyword (in title or abstract)
Hospital worker	Health Personnel (Mesh)	Employee* Individual* Worker* Personnel
Green behaviour	Waste Management (Mesh) Recycling (Mesh)	Green behavior* Environment friendly behavior* Environmental friendly behavior* Environment-friendly behavior* Environmental-friendly behavior* Environmentally friendly behavior* Environmentally-friendly behavior* Pro-environment* AND Behavior* Proenvironment* AND Behavior* Sustainable behavior* Eco AND Behavior* Ecofriend* AND Behavior* Environment* AND Organizational citizenship behavior* Green AND Organizational citizenship behavior* Environment* AND Prosocial behavior* Green AND Prosocial behavior* Environmental protection Recycl* Reuse Re-use
Hospital setting	Hospitals (Mesh) Health Facilities (Mesh)	Healthcare* Healthcare setting*

and actions of individual employees.⁷ In fact, research in non-healthcare sectors has demonstrated that employees' green behaviour positively impacts an organisation's environmental performance.^{8,9} For instance, in the hospitality and manufacturing industries, employee green behaviour has been linked to organisational outcomes such as energy savings, water conservation and waste reduction.^{9–11} Studies have also shown that employees' green behaviour positively influences their job satisfaction¹² and well-being.¹³ These personal benefits can in turn enhance employees' motivation and engagement, thereby supporting organisations' efforts to achieve their sustainability goals.¹⁴

Although several literature reviews on employee green behaviour have been published,^{7,15} they predominantly focused on research in non-healthcare industries such as manufacturing and hospitality. A recent meta-analysis⁶ reviewed 126 studies on employee green behaviour, but only 6 of these studies were conducted within healthcare contexts. Similarly, subsequent literature reviews by Zacher *et al*⁷ and Zhang *et al*,¹⁵ respectively, included just two and one studies conducted in hospital settings. These reviews did not provide focused analysis of employee green behaviour within hospitals. Instead, hospital-related

studies were included as a small subset within broader industry-wide analyses, limiting insights specific to the healthcare sector. This research gap underscores the need for a dedicated review that focuses exclusively on employee green behaviour in hospital settings.

Compared with other industries, hospitals operate under strict regulatory, operational and clinical constraints that create unique challenges for fostering employee green behaviour. For example, hospital environments must maintain a careful balance between patient care and strict regulatory compliance, often leaving limited room for employees to engage in green behaviour.¹⁶ Specifically, organisational priorities in hospital settings often emphasise adherence to safety and operational protocols over sustainability initiatives,¹⁷ which can further constrain employee green behaviours. Given these contextual characteristics, a focused review of research on employee green behaviour in hospitals is necessary to deepen our understanding of how such behaviour manifests and can be supported in this distinctive setting.

To address this need, our scoping review will synthesise research on employee green behaviour conducted within hospital contexts, offering a broader and more exploratory perspective. Specifically, we will identify the antecedents (eg, organisational culture, leadership support) and outcomes (eg, environmental performance, employee well-being) of such behaviour as reported in the existing literature. By doing so, we aim to map the current state of research in this area and identify directions for future studies.

METHODS AND ANALYSIS

Study design

The scoping review will be conducted following the Joanna Briggs Institute methodology¹⁸ and will be reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.¹⁹ The completed PRISMA-ScR checklist for the scoping review protocol is provided in online supplemental material I. The protocol has been registered in the Open Science Framework (<https://doi.org/10.17605/OSF.IO/YU345>).

Review questions

The primary objective of the scoping review is to examine the literature on employee green behaviours within hospital settings. Specifically, the review will address the following research questions:

1. How has employee green behaviour in hospital settings been defined in the literature?
2. What theoretical frameworks or models have been applied to understand employee green behaviour in hospitals?
3. What are the key antecedents and consequences of green behaviour among hospital employees?
4. What research gaps exist regarding employee green behaviour in hospital settings, and how might these gaps be addressed in future studies?

Inclusion criteria

Population

The review will include any personnel employed within the hospital environment, regardless of their professional roles.

Concept

The review will examine research on employee green behaviour—that is, observable pro-social and moral conduct by employees in the workplace that contributes to environmental sustainability.⁵ Studies on green behaviour outside the workplace (eg, green consumer behaviour) will be excluded to maintain a focus on environmentally sustainable actions specifically within hospital settings.

Context

Only studies conducted in hospital settings will be included. Research performed in other healthcare contexts, such as nursing homes or community care settings, will be excluded.

Evidence sources and search strategy

The scoping review will include primary research articles documenting observational quantitative studies (eg, prospective and retrospective cohort, case-control and analytical cross-sectional studies) as well as qualitative and mixed-method studies. Intervention-based studies, conference abstracts, opinion papers, editorials and brief communications will be excluded. Sources will be included only if they are written in English.

To identify relevant literature, a comprehensive search strategy will be developed with the assistance of a health sciences librarian. Searches will be conducted using seven electronic databases: PubMed, Cumulative Index of Nursing and Allied Health Literature, Embase, Scopus, Web of Science, PsycINFO and Emerald Journals. Additionally, relevant grey literature and white papers will be sought in Google Scholar; ProQuest Dissertations & Theses Global; National Library of Medicine Bookshelf; and international organisations such as the United Nations, WHO, World Meteorological Organization and Intergovernmental Panel on Climate Change. However, hospital websites will be excluded from the grey literature search due to inconsistent reporting formats, which make it difficult to analyse and compare findings across studies. Reference lists of pertinent literature will also be thoroughly reviewed to identify additional sources. Search terms will be structured around three main concepts—(1) hospital worker, (2) green behaviour, and (3) hospital setting—in addition to relevant synonyms and related terms (see [table 1](#)). A preliminary search was conducted on 31 October 2024, and results are provided in online supplemental material II. The final search will cover sources published or issued up to 31 January 2025, with no restrictions on the publication year.

Source of evidence selection

Following the literature search, all identified citations will be imported into EndNote 20.6, where duplicates will

be removed. Titles and abstracts will be independently screened by two researchers to assess eligibility based on the inclusion criteria. After this initial screening, full texts will be independently reviewed by the same researchers to make final inclusion determinations. Any differences in opinion between the reviewers during the selection process will be discussed to reach a consensus. The search and study selection process will be described in the scoping review text and summarised in a PRISMA-ScR flow diagram.¹⁹

Data extraction

The research team will develop a data extraction form in Microsoft Excel to collect specific details from each selected study, including information on objectives, participants, settings, theoretical frameworks, definitions of employee green behaviour, research methods and key findings. The extraction form may be adjusted when necessary to ensure that all relevant evidence is captured. Two researchers will independently extract data from the studies. The extracted data will then be reviewed by a third researcher to ensure accuracy and completeness. Any discrepancies will be discussed within the review team to reach consensus.

Analysis and presentation of results

The scoping review will examine how employee green behaviour is defined in hospital-based studies, along with the theoretical frameworks, key antecedents and consequences. The data will be analysed descriptively, following the scoping review frameworks outlined by Arksey and O'Malley²⁰ and Peters *et al.*²¹ Our analysis will focus on identifying recurring themes and exploring relationships between contributing factors and outcomes, with findings presented in a clear and well-organised format. Visual tools such as tables, graphs, word clouds and infographics will be used where appropriate to enhance clarity and accessibility.

ETHICS AND DISSEMINATION

The study will not require ethical approval, as all data will be collected from publicly available documents. The scoping review findings will be disseminated through publication in a peer-reviewed journal and conference presentation.

Contributors SEL conceptualised this study. JKS and HL contributed to data collection. SEL, JKS and HL contributed to drafting of the manuscript. SEL substantially revised the article. All authors reviewed and approved the final version of the manuscript for publication. HL is the guarantor.

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ORCID iDs

Heejin Lim <http://orcid.org/0009-0005-7548-0445>

Ja Kyung Seo <http://orcid.org/0000-0002-5065-8383>

Seung Eun Lee <http://orcid.org/0000-0002-4173-3337>

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