Дослідження
Research

НИРКИ KIDNEYS

DOI: 10.65327/kidneys.v15i1.597

Sukriti Khanna[1*], Dr. Raskirat Kaur[2]

[1*]*Research Scholar, Department of Psychology, Chandigarh University, Punjab, Sukriti.khanna25@gmail.com; ORCID ID: https://orcid.org/0009-0001-9367-5079*
[2]*Assistant Professor, Department of Psychology, Chandigarh University, Punjab, raskiratkaur@gmail.com; ORCID ID: https://orcid.org/0000-0002-2986-7244*

***Corresponding Author:** Sukriti Khanna*
**Research Scholar, Department of Psychology, Chandigarh University, Punjab, Sukriti.khanna25@gmail.com; ORCID ID: https://orcid.org/0009-0001-9367-5079*

Psychological Drivers Of Pro-Environmental Behaviour In Healthcare Organizations: Implications For Sustainable Renal Care

For citation: Kidneys. 2026;15(1): 42-53. Acceptance- 30/10/2025 Received- 15/10/2025
doi: 10.65327/kidneys.v15i1.597

Abstract
Healthcare organisations play a critical role in protecting human health, yet contribute substantially to environmental degradation through intensive energy use, water consumption, and waste generation. Renal care—particularly dialysis—is among the most resource-intensive domains within healthcare, making sustainability in kidney care both urgent and complex. Although healthcare systems increasingly adopt environmental policies and technological innovations, these initiatives often underperform because they insufficiently address the psychological and behavioural factors shaping everyday clinical practice. This narrative review synthesises evidence on the psychological drivers of pro-environmental behaviour (PEB) in healthcare organisations and examines their implications for kidney health and sustainable renal care. Drawing on established psychological frameworks, including the Norm Activation Model, the Theory of Planned Behaviour, and value-based theories, the review highlights the roles of personal values, lifestyle orientation, perceived behavioural capability, and organisational climate in shaping discretionary sustainability behaviours. The evidence consistently indicates that green lifestyle orientation and value congruence are stronger predictors of workplace pro-environmental behaviour than environmental commitment, awareness, or green human resource management alone. In renal care settings—where clinical protocols, workload pressures, and patient safety concerns constrain action—effective sustainability depends on behaviourally informed strategies that align environmental responsibility with professional ethics and routine practice. The review concludes that sustainable renal care is not solely a technological challenge but a behavioural one, underscoring the need to embed psychological insights into healthcare sustainability efforts to advance both planetary health and long-term kidney care resilience.

Keywords: Environmental psychology; Kidney health; Pro-environmental behaviour; Renal care sustainability; Sustainable healthcare

Introduction

The contribution of healthcare systems to the contemporary sustainability discourse is complicated [1]. Yet, being primarily aimed at securing and replenishing human health, healthcare organisations become one of the most resource-intensive branches of the institution simultaneously [2]. Massive levels of energy consumption, water usage, dependence on drugs and waste generation make healthcare a significant contributor to environmental degradation [3]. As climate change is becoming an increasing menace to the health of the population, the issue of environmental sustainability of healthcare provision has not only become a matter of operation, but also a social health need [4].

Renal services are a highly consuming area in the context of healthcare [5]. Dialysis (and hemodialysis especially) requires large amounts of treated water, constant electricity, and large amounts of single-use products, i.e. plastic tubing, filters, syringes, and the packaging material [6]. A single dialysis can consume hundreds of litres of water and generate several

For correspondence: Sukriti Khanna, Research Scholar, Department of Psychology, Chandigarh University, Punjab, Sukriti.khanna25@gmail.com; ORCID ID: https://orcid.org/0009-0001-9367-5079
Full list of authors information is available at the end of the article.

kilograms of waste, only a small fraction of which can be used as recyclable clinical waste [7]. The environmental burden of kidney care, expected to increase in the coming decades, should significantly increase due to the rising prevalence of chronic kidney disease and the rising demand of renal replacement therapy globally [8]. Thus, renal care has become a noteworthy although immature dimension of the environmentally aware healthcare systems [9].

To respond to these dilemmas, healthcare organisations have begun to adopt sustainability policies, environmental management systems and regulatory framework to reduce their environmental footprint [10]. Such projects often address technological advances, energy efficiency, and standardized environmental policies [11]. However, more and more empirical studies show that such a policy- and technology-oriented methodology is not sufficient in itself [12]. The general efficiency of the environmental programs is usually poor due to the absence of contacts between medical workers, the unfavourable adherence to the sustainability practice, and the inadequate incorporation of the environmental aims into the routine clinical activities [13]. Research within the organisational environment will always uncover the fact that the strategies of sustainability cannot work when they are founded primarily on the formal regulations without focusing on the behavioural and psychological factors affecting actions of the individuals [14].

The academic interests have converged on the psychological foundation of pro-environmental behaviour (PEB) to organisations around this implementation gap [15]. PEB is an individual voluntary, discretionary activity, which contributes to environmental protection in addition to the official job responsibilities [16]. Examples of these behaviours in medical facilities include energy and water saving, the minimization of the wasteful use of disposables, adherence to waste segregation and the promotion of procurement and clinical activities that are environmentally friendly [17]. More to the point, the actions are not fully determined by the organisational requirements or external control, but they are deeply rooted in personal values, beliefs, motives, and perceptions of accountability [18].

Such psychological models as the Norm Activation Model, the Theory of Planned Behavior and value-based models offer appropriate explanations of the reasons why individuals engage in environmental responsible behaviour [19]. The models observe the significance of moral obligation, environmental consequence awareness, perceived behavioural control and personal value in action spur [20].

Despite such advancements, the medical field, renal care included, is not exhaustively researched as regards its psychological facet. The existing body of literature on PEB is corporate/manufacturing/public-sector focused, and there is very little information to draw on in order to discuss the particular constraints of a healthcare setting [21]. Renal care professionals are operating under time, strict clinical practice and ethical responsibility to patient safety and this may step into or redefine the environmentally responsible behaviour [3]. How psychological drivers work in these environments is, therefore, urgent in order to develop meaningful and clinically reasonable sustainability interventions.

The sustainability of nephrology has also been examined in excessively focusing on technological and infrastructural interventions such as water saving cycling systems, less-consumptive dialysis machines and methods to reduce waste. These innovations though vital, cannot achieve complete potential until they are performed with concomitant behavioural involvement by professionals in the healthcare field. Sustainable renal care is then not the technical problem per se, but a behavioural problem, which should consider the psychological determinants of day to day clinical practice.

Objectives of the review

The current review is a synthesis of evidence on psychological motivation on pro-environmental behaviour within healthcare organisations and the implication on sustainable renal care. It incorporates psychological theory and the study of organisational sustainability to consider how organisational contexts, values, self-efficacy and lifestyle orientations induce environmental behaviour in renal settings. The review identifies the necessity to shift the compliance-related practices to behaviourally informed strategies that facilitate environmentally responsible kidney care and sustainability of the system in the long term.

Review

Pro-Environmental Behaviour in Healthcare Organisations

Pro-environmental behaviour (PEB) in healthcare organisations is personal behaviours that reduce environmental risk and promote efficient use of resources in both the clinical and administrative setting [22]. They are energy and water conservation, waste separation and minimisation, unnecessary single-use materials avoidance, and procurement that is environmentally friendly in nature [23]. The cumulative effect of individual, daily decisions in medical practice has a considerable effect on the performance of the environment within an organisation [24].

Among the most notable points of difference of the PEB literature is the contrast between mandatory compliance behaviours and discretionary behaviours [25]. Mandatory behaviours are guided by formal laws and clinical recommendations (e.g., waste management of infections), whereas discretionary PEBs are not always connected with job specifications, rather based on the personal motivation and moral judgement [22]. As it has been demonstrated, the less evident, the harder to manage discretionary behaviours usually have a determinant role in the long-run improvement of the environment as a result of acting at an infinitely large number of daily interactions with equipment, materials and facilities [26].

Empirical research in organisations demonstrated that fairly trivial, repetitive behaviours, such as machine shutoff, reduced printing, or consumable usage less dependent on the environment, can add up into substantial environmental effects when adopted by a

large number of individuals [24]. The review reinforces this fact by showing that daily practices involved in energy consumption, recycling, and purchasing have a profound effect on the sustainability on a large scale when inculcated among the workforce [23]. This is especially applicable in healthcare where the environmental impact of routine behaviour is exaggerated due to a high degree of throughput and standardisation [25].

An example is renal care [26]. Dialysis facilities rely on the unchanging power source, colossal volumes of treated water, and gigantic amounts of single-use resources [22]. Staff behaviours, in turn, can play a significant role in mitigating the environmental burden through minimizing water waste in priming and cleaning, turning off monitors and machines that are not in operation, and helping to procure sustainably, without influencing the safety of patients [24]. The central role of PEB in enhancing sustainable kidney care [23] is noted by viewing sustainability as part of the everyday clinical care rather than infrequent programs.

Psychological Foundations of Pro-Environmental Behaviour

The necessity to understand why the healthcare professionals adopt pro-environmental behaviour (PEB) should be addressed with references to the psychological mechanisms that govern behaviour outside of the official guidelines [27]. Important theories such as the Norm Activation Model (NAM), the Theory of Planned Behaviour (TPB) and value-based theories all lead to the same inference that environmentally responsible action is comprised of internalised norms, beliefs, and perceived capability, which interact with organisational conditions [28].

The NAM indicates that PEB happens when personal moral norms are triggered by the consciousness of the aftermath and attribution of responsibility [29]. Human beings would tend to do more when they understand that the behaviour causes harm to the environment and they feel that they are supposed to minimize the adverse effects of the behavior [7]. Evidence in organisations has highlighted that moral feelings and cognitive dissonance are vital in making individuals align their beliefs and behaviour and the incongruence of values can lead to PEB triggered by discomfort [30].

The TPB perspective as an extension of this moral perspective includes attitudes, subjective norms and perceived behavioural control as the proximate determinants of intention and behaviour [31]. Peer, supervisor, and the culture signals are especially effective, in particular, subjective norms, with the context of healthcare being a team-based environment of care delivery [10]. Self-efficacy and perceived behavioural control also play a significant role because unless clinicians believe that they can successfully engage in new practices in a sustainable manner they are not likely to engage in them when time pressure exists, or when they believe that the practices are incompatible with clinical priorities [32].

The transferability and stability of PEB across settings are also brought out through value-based theories [5]. In cases where environmental protection can be expected to align with the most important personal values, the behaviour becomes less conditional by both surveillance and reward [16]. The medical workers tend to operate in the highly developed ethical philosophies that are based on accountability, beneficence, and custodianship [3]. These professional standards provide an opportunity by which environmental responsibility, which is a logical continuation of clinical ethics and not a foreign and opposing imperative, can be introduced [11]. Together, these theories imply that effective sustainability policies in healthcare must help meet the moral norms, the societal environment, and perceived capacity simultaneously [15]. Figure 1 illustrates the interaction between psychological frameworks, organizational context, and pro-environmental behaviour in healthcare.

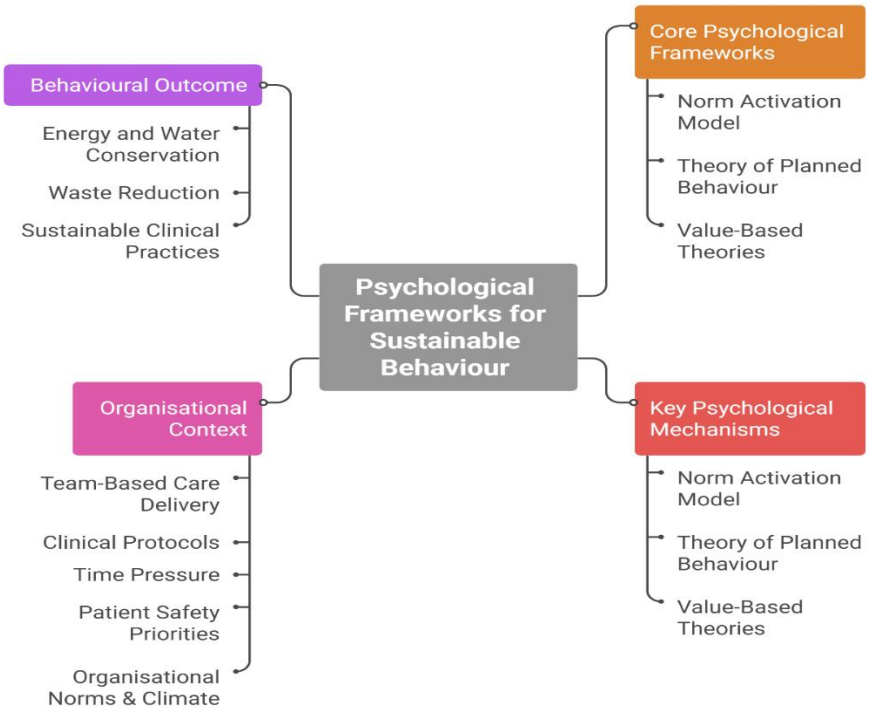

Figure 1. Psychological Drivers of Pro-Environmental Behaviour in Healthcare

Personal Values and Environmental Attitudes

Psychological determinants that will inevitably serve as effective predictors of pro-environmental behaviour (PEB) within an organisation include personal values and environmental attitudes [33]. The value theory that was developed by Schwartz is the set of value orientations, such as openness to change, compassion, biospheric concern, which precondition the willingness to act in an environmentally responsible manner [34]. Individuals who prioritize these values will view sustainability as a moral salience and they will act [12]. The empirical evidence has helped to understand that personal values are more likely to affect PEB than the formal organisational instructions do [35]. Openness to change and compassion were particularly applicable here, and one can say that adaptability, empathy, and future-oriented concern can assist discretionary PEB [36]. This finding challenges policy-based solutions in the case of healthcare organisations and raises the importance of value congruence between institutional sustainability goals and personnel sustainability goals [18]. Environmental attitudes, the beliefs and judgements regarding the problems of the environment are one of the major bridges between views and behaviour [37]. Positive attitudes increase the likelihood that sustainability practices will be regarded as important compared to being viewed as heavy [21]. However it has been seen that the anticipation of direct attitude to behaviour translation is contraindicated [14]. The attitudes should be congruent with the congruent values, social norms, and pathways of action in order to generate consistent PEB [20].

Value-based judgement is particularly applicable to the context of renal care because the majority of judgements on sustainability lack any direct direction [11]. The choice to decrease the consumables, to promote a more environmental friendly one, or to enhance the habitual behavior may be informed by the internal rules of the clinicians, however, not necessarily with reference to the official ones [25]. The consideration of personal values of the clinicians in the alignment of organisational efforts when supported by leadership messages, recognition, and participatory design can therefore enhance the validity and sustainability of sustainable practices [16]. Such alignment is essential to the PEB introduction into the renal care fabric and to the transfer of the environmental concern to the practice-level change that is both sustained and sustainable [22].

Environmental Commitment in Healthcare Staff

Environmental commitment refers to the degree to which individuals at the organisational level identify themselves psychologically with, are accountable to and motivated towards subscribing to environmental goals within their organisation [38]. The organisational sustainability literature has frequently viewed environmental commitment as a motivational antecedent of pro-environmental behaviour (PEB) due to the willingness of the employees to behave in a manner that aligns with the institutional environmental interests [39]. This commitment within healthcare organisations is often translated into the way of sustainability policy approval, participation in environmental affairs, and verbal support of environmentally responsible practices [12].

Despite the significance of its concept, empirical research revealed that environmental commitment is not always transferred to consistent PEB [40]. The review findings show that the direct correlation between environmental commitment and workplace PEB did not exist significantly which means that commitment may not be adequate factor needed to induce behaviour change in a complex organisational environment [41]. The pattern is indicative of a significant discrepancy

between attitudinal approval and behavioural performance, which is particularly significant in health care environments [7].

Clinical settings are also usually time-strained, overworked and very demanding with regard to patient safety demands [18]. These restrictions may prevent discretionary behaviour even in individuals who are much involved in environmental protection [9]. The risk of discretionary environmental action can be considered limited or dangerous in the renal care case, where dialysis sessions require constant monitoring, predefined rules, and severe infection control measures [22]. Consequently, environmentally committed staff can defer the issue of sustainability when it conflicts, literally or otherwise, with the clinical ones [5].

In addition, the notion of environmental commitment within the healthcare sector can be quite nominal unless it is supported through concrete behavioural mediums [14]. The review highlights the importance of combining commitment with value congruence, perceived feasibility, and situational reinforcement to change behaviour in a meaningful manner [29]. This implies that in renal care environment, environmental commitment must be translated into practice-safe water-saving action or waste minimisation action, which will not affect the care of patients [16]. Without this kind of a translation machinery, commitment will be a dream and not a viable one. The role of environmental commitment in healthcare pro-environmental behaviour is outlined in Table 1.

Table 1. Environmental Commitment and Pro-Environmental Behaviour in Healthcare

Aspect	Description	Implications for Renal Care	References
Definition of environmental commitment	Psychological identification with, responsibility for, and motivation toward organizational environmental goals	Establishes attitudinal support for sustainability among healthcare professionals	[38]
Role in organizational sustainability theory	Viewed as a motivational antecedent of pro-environmental behaviour due to alignment with institutional goals	Suggests potential leverage point for encouraging sustainable practices	[39]
Expression in healthcare settings	Endorsement of sustainability policies, participation in environmental initiatives, and verbal support	Often symbolic and not directly embedded in clinical workflows	[12]
Empirical relationship with PEB	Evidence shows no significant direct association between environmental commitment and workplace PEB	Indicates commitment alone is insufficient to drive behaviour change in renal care	[40, 41]
Attitude–behaviour gap	Discrepancy between expressed support for sustainability and actual behaviour	Particularly pronounced in complex healthcare environments	[7]
Clinical constraints	Time pressure, workload, and patient safety demands limit discretionary behaviour	Reduces opportunities for voluntary environmental actions	[18, 9]
Renal care–specific barriers	Dialysis requires constant monitoring, strict protocols, and infection control	Sustainability actions may be perceived as risky or impractical	[22]
Behavioural deferral	Sustainability deprioritized when perceived to conflict with clinical priorities	Reinforces dominance of immediate patient care concerns	[5]
Limitations of symbolic commitment	Commitment remains nominal without actionable pathways	Limits real-world environmental impact	[14]
Conditions for effectiveness	Commitment must be paired with value congruence, feasibility, and contextual reinforcement	Supports translation of intent into practice	[29]
Translation into practice	Clinically safe water-saving and waste-minimization strategies	Enables sustainability without compromising patient care	[16]
Consequences of poor translation	Commitment remains aspirational rather than operational	Prevents sustained environmental improvement	[24]

Environmental Consciousness and Awareness

Environmental consciousness is the awareness of individuals to issues of the environment, knowledge of the policy of the organisation of the environment and the protection of the ecological implications [6]. Educational programs, sustainability reporting, and

policy communication traditionally support environmental consciousness in healthcare organisations, and it is presumed that an increase in environmental awareness would facilitate environmentally responsible behaviour [17]. Such an assumption, however, is more and more now coming to be challenged [28]. The review results indicate that environmental awareness does not directly influence pro-environmental behaviour (PEB) at an organisational level significantly [34]. This finding agrees with the broader literature on sustainability that demonstrates that the attitude-behaviour gap has remained stable in that individuals who are well informed and interested in environmental pollution do not always alter their behaviour in response [9].

This unequal state is worsened in health care context since there are structural and professional constraints [21]. It might be the case that there is a high environmental awareness among clinicians who do not believe that they have much autonomy to act on such knowledge [13]. The consciousness of the high dialysis water and energy footprint in the renal care might not necessarily change behaviour as most of the resource-consuming processes are embedded within a sequence of standardised clinical processes and technological infrastructures [25]. As long as individuals believe that environmental impacts do not have a place in the circle of influence, awareness alone is not likely to motivate action [4].

Those findings observe the relevance of environmental consciousness within contexts [31]. Unspecific sustainability education may have minimal behavioural impact unless linked to role specific practices and outcomes [18]. More productive could be to arouse responsibility and behavioural engagement by offering awareness efforts that transform abstract environmental problems into meaty, practice-relevant information (quantifying the volume of water utilised per dialysis session or creating a cumulative visualisation of tiny efficiency boosters). The review emphasizes that the awareness must be combined with transparency on matters of individual agency and responsibility, in case it can affect PEB [40]. The idea of environmental consciousness in this respect can be taken to imply a necessary, yet not sufficient condition of sustainable behaviour in healthcare [11]. The way in which it is integrated with perceived behavioural control, desirable organisational norms, and an action pathway, which becomes feasible in clinical practice, determine its successful performance [22].

Green Lifestyle Spillover into Healthcare Practice

Among the psychological motives explored in the literature on organisational sustainability, the influence of green lifestyle orientation can be considered a fairly strong predictor of a workplace pro-environmental behaviour (PEB) [42]. A green lifestyle can be seen as the way the individuals will be oriented to the environmentally responsible behaviours in their personal lives, such as saving of power and water, restriction of waste, recycling and making sustainable consumption decisions [18]. Interestingly, the review proves that green lifestyle is the most predictive of the performance of PEB at work, surpassing such predictors as environmental commitment, environmental consciousness, self-efficacy, and green human resource management practices [43].

The observation provides good reasons why there exists a behavioural spillover between personal and professional areas [27]. When individuals use sustainability approach in their day-to-day activities, it is most probable that they will also use the same behaviours in organisations, although these types of behaviour might not be offered or tracked through formal rewards [14]. This spillover means that PEB is a very interrelated variable with identity and self-concept as opposed to situational only [44]. When the aspects of sustainability are part of the process of defining oneself in various contexts, environmental responsible behaviour will be upheld [21].

It is particularly the case within the healthcare setting that this spillover effect has particular implications [30]. The renal care workers having a green lifestyle are able to show greater interest in inefficiency, can be more willing to confront wasteful habits, and can be more proactive to exercise sustainability within clinical restraints [45]. An example is that, clinicians accustomed to saving it at home would tend to pay more attention to water usage during dialysis preparations, or to be more loyal when turning off devices when it is clinically necessary [16]. Such behaviours are usually unofficial, and they are heavily reliant on the intrinsic motivation rather than following policy [24].

Green lifestyle spillover is the form that pretends to be the most supreme, meaning that sustainability in the healthcare sector is not to be confined in the work place only [11]. Measures taken by an organisations that facilitate the sustainable life of employees (e.g., by encouraging low-carbon commuting, introducing environmental values to wellbeing programs, or rewarding the impact of environmentally friendly behaviour) can indirectly impact PEB positively in a clinical setting [46]. In the renal care context, environmental sustainability practices can be implemented using strategies of developing a professionally sustainable identity to make it a normal practice of offering high-quality and ethical care to the patients [19]. The green lifestyle orientation with its evidence becomes one of the leverage points which the sustainable renal care promotion should rely on [28]. Recognising the fact that pro-environmental behaviour is not an organisational result, the healthcare executives can create interventions that enhance sustainability as a stable element of professional identity, thereby resulting in lifelong behaviour change, and reducing the environmental footprint of kidney care services [23]. Key behavioural spillover mechanisms are outlined in Table 2

Table 2. Green Lifestyle Orientation and Pro-Environmental Behaviour in Healthcare

Aspect	Description	Implications for Renal Care	References

Definition of green lifestyle orientation	Habitual engagement in environmentally responsible behaviours in personal life, including energy and water conservation, waste reduction, recycling, and sustainable consumption	Indicates predisposition toward sustainability beyond formal work roles	[18]
Predictive strength for workplace PEB	Identified as the strongest predictor of workplace pro-environmental behaviour compared to other psychological and organizational drivers	Highlights green lifestyle as a key leverage point for sustainability in renal services	[42]
Comparison with other drivers	Outperforms environmental commitment, environmental consciousness, self-efficacy, and green HRM practices	Suggests behavioural drivers outweigh policy- or structure-based mechanisms	[43]
Behavioural spillover effect	Environmentally responsible behaviours in personal life transfer to professional settings	Explains persistence of sustainability practices without formal enforcement	[27]
Identity-based mechanism	PEB closely linked to identity and self-concept rather than situational cues	Supports framing sustainability as part of professional identity	[21]
Relevance in healthcare	Spillover particularly influential in team-based, high-pressure clinical environments	Encourages discretionary sustainability actions in constrained settings	[30]
Renal care–specific behaviours	Attention to water use during dialysis preparation and equipment shutdown when appropriate	Reduces resource use without compromising patient safety	[16]
Nature of behaviours	Primarily discretionary and intrinsically motivated rather than policy-driven	Limits reliance on formal compliance mechanisms	[24]
Beyond workplace interventions	Sustainability should extend beyond organizational boundaries into employees' lifestyles	Expands scope of sustainability strategies in healthcare	[11]
Organizational support mechanisms	Encouraging low-carbon commuting, integrating sustainability into wellbeing programs, and recognizing green behaviour	Indirectly strengthens workplace PEB	[46]
Professional identity integration	Sustainability embedded within ethical and professional standards of care	Normalizes environmentally responsible renal practice	[19]
Strategic importance	Green lifestyle orientation as a central leverage point for sustainable renal care	Supports long-term reduction of environmental footprint	[23]

Green Self-Efficacy among Healthcare Professionals

Green self-efficacy is the personal beliefs of people about their capabilities to commit behaviours leading to a high level of environmental reduction [47]. Self-efficacy is one of the determinants of organisational psychology because it determines how values and intentions are converted to practice [33]. In particular, green self-efficacy pertains to the healthcare sector as clinicians should be persuaded that they can manage to act in a sustainable way without compromising patient safety, efficiency of work processes and regulatory standards [41]. In theory, it is empirically demonstrated that green self-efficacy is not consistently a predictor of workplace PEB [48]. The review also presents findings that no significant direct relationship exists between green self-efficacy and PEB [34]. This means that in the absence of confidence, lack of confidence will not suffice to eliminate contextual confines that characterize clinical work [30]. Perceived capability in protocol based risk aware situations must be supplemented by actual competence and institutional authority to act [45]. This is especially observed in renal care [49]. Dialysis practice is highly standardised, technology mediated and has strong infection-control and safety standards [32]. Clinicians are able to facilitate sustainability goals yet they do not know how to implement resource-saving initiatives in an established practice [38]. A low level of perceived risk, even such, can therefore deter discretionary action in such a case [44]. Consequently, change might be evaded even by the most confident professionals unless sustainability practices are explicitly certified, operationally viable, and clinically safe [35].

The evidence has demonstrated that self-efficacy can only exert behaviours effects when reinforced by mastery experiences, feedback and clear action script [50]. In renal care, it implies that generic stimulation is replaced by skills-based interventions, such as demonstrating safe water conservation during priming and validating the procedures of energy-saving equipment decommissioning [40]. The perceived and actual behavioural control identity becomes identical as the clinicians become conscious of what to do and how to do it without harm, and thus most likely that self-efficacy would transform into sustained PEB [31]. Green self-efficacy should be rather understood, then, as an organizationally constructed possibility compared to an independent quality [42]. It depends on training, experience and immediate correspondence to conditions of clinical standards, which are essential in inculcating the element of sustainability to the routine care of the kidneys [37].

Green Human Resource Management (HRM) in Healthcare

Green human resource management (HRM) is a form of HRM that includes the element of environmental sustainability in its human resource practices, such as recruitment, training, appraisal, and rewards [46]. In theory, green HRM institutionalises the concept of sustainability through aligning employee behaviour with organisational environmental objectives [12]. It has been recommended as a normalisation of pro-environmental behaviour (PEB) in different workplace roles within the healthcare context [27]. However, it has been empirically shown that green HRM may not significantly directly affect individual PEB [49]. The review did not provide any significant correlation between green HRM practices and the workplace PEB [35]. This finding aligns with the broader organisational literature proposing that formal policies are unlikely to have any influence on the discretionary behaviour except when they modify the underlying norms, values and perceived priorities [14].

Healthcare-specific constraints can explain this low direct effect [21]. Sustainability goals may be pushed out of HR systems by the absence of staff, pressure on workload, and performance measures based on safety and throughput [18]. Incentives and appraisals are generally clinical outcome and compliance-based and rarely allot much room to the environmental standards [7]. Besides this, management risk avoidance may limit the visibility or enforceability of green Hr expectations in those cases when they are perceived to disrupt patient care [32]. It is important to note that green HRM does not have a direct impact but an indirect impact [41]. Green HRM may lead to the feeling of a psychological green climate, as organisations respond to the call of organisational values, and an agreement that environmental responsibility is real and needs to be [23]. The review points out that congruence between organisations and employees can increase the possibility of PEB despite the fact that policies are not strictly enforced [29].

Green HRM could contribute to some part of renal care by means of legitimisation of sustainability in the professional conversation, the leadership conversation, and the training priorities [10]. Thus, we had better think of green HRM as enabling architecture, which empowers without substituting other behavioural drivers, such as values, lifestyle orientation, and perceived feasibility [44]. Its effectiveness in healthcare hinges on its alignment with clinical ethics as well as its reinforcement, without rivalry with the main care goals. The indirect role of green human resource management in shaping workplace sustainability behaviours is outlined in Table 3.

Table 3. Green Human Resource Management and Pro-Environmental Behaviour in Healthcare

Aspect	Description	Implications for Renal Care	References
Definition of green HRM	Integration of environmental sustainability into HR practices, such as recruitment, training, appraisal, and rewards	Provides structural support for sustainability in healthcare organisations	[46]
Theoretical role of green HRM	Aligns employee behaviour with organisational environmental objectives	Intended to institutionalise sustainability across professional roles	[12]
Application in healthcare	Proposed as a mechanism to normalise pro-environmental behaviour across diverse clinical roles	Offers organisation-wide sustainability signalling	[27]
Direct relationship with PEB	Empirical evidence shows no significant direct effect on the individual workplace PEB.	Indicates limited behavioural impact in isolation	[35]
Policy–behaviour gap	Formal policies influence behaviour only when they reshape norms and values.	Explains the weak effectiveness of green HRM alone	[14]
Healthcare-specific constraints	Staff shortages, workload pressure, and safety-focused performance metrics	Sustainability is deprioritised within HR systems	[2]
Incentive and appraisal limitations	HR evaluations prioritise clinical outcomes and compliance over environmental criteria.	Limits motivation for discretionary sustainability actions	[7]
Managerial risk aversion	Enforcement of green HR expectations is reduced when perceived to conflict with patient care.	Reinforces caution toward sustainability initiatives	[32]
Indirect influence of green HRM	Green HRM contributes indirectly rather than through direct behavioural control.	Highlights the importance of cultural pathways	[41]
Psychological green climate	Signals organisational values and legitimacy of environmental responsibility	Encourages voluntary engagement in PEB	[23]
Value congruence	Alignment between employee and organisational values increases the likelihood of PEB.	Enables behaviour even without strict policy enforcement	[29]
Relevance to renal care	Legitimises sustainability in professional dialogue, leadership messaging, and training	Supports integration of sustainability into renal practice	[10]
Role as enabling architecture	Supports but does not replace behavioural drivers such as values and lifestyle.	Encourages complementary sustainability strategies	[44]

Conditions for effectiveness	Alignment with clinical ethics and non-competition with core care objectives	Essential for acceptance in renal care environments	[5]

Psychological Drivers and Sustainable Renal Care Outcomes

Psychological drivers used in the sustainability plans directly impact sustainable renal care [26]. The psychological factors that predetermine the interactions between the clinicians and resource-intensive systems on a day-to-day basis include personal values, lifestyle orientation, self-efficacy, and organisational climate [17]. When paired with sustainability goals, these drivers would enable them to realise measurable environmental benefits without compromising the quality of care [39]. Aligning behaviour in renal services can reduce water and energy usage, waste, and ensure sustainable procurement [8]. Value-oriented attentive clinicians can also be more attentive to water usage in the preparation and cleaning [31]. With good sustainability identities, employees can market consumable products that are environmentally friendly or work processes that are more efficient [22]. These behaviours would compound into high environmental footprint cuts of dialysis units with time [44]. Besides the environmental interventions, sustainable renal care has broader health implications [14]. The oncogenicity of heat stress, water insecurity and burden of chronic diseases are aggravated by climate change and environmental degradation factors, both of which increase the risks of kidney [5]. Reducing the environmental expenses of renal services is therefore an indirect kidney-health promotion intervention, similar to clinical care and preventive health goals of the population [36].

The review provides ample support for the argument that behavioural determinants, with the green lifestyle orientation being the most notable, are a decisive factor in the workplace pro-environmental behaviour (PEB) [48]. This observation contributes to the fact that sustainability strategies cannot be reduced to infrastructures and policies, including the psychological dimension of healthcare work [11]. Professional identity, professional ethics and the practice of incorporation of sustainability are means to make sustainable change [33]. Sustainable renal care is not just a technological issue, but a behaviour [41]. The reason behind this is that psychological alignments to the organisational structures bring about better performance within the environment and system resilience [19]. Recognising and applying these drivers will be essential to the creation of environmentally friendly kidney care and safeguarding the planet and human health [27]. Figure 2 illustrates the behavioural pathways linking psychological drivers to sustainable renal care.

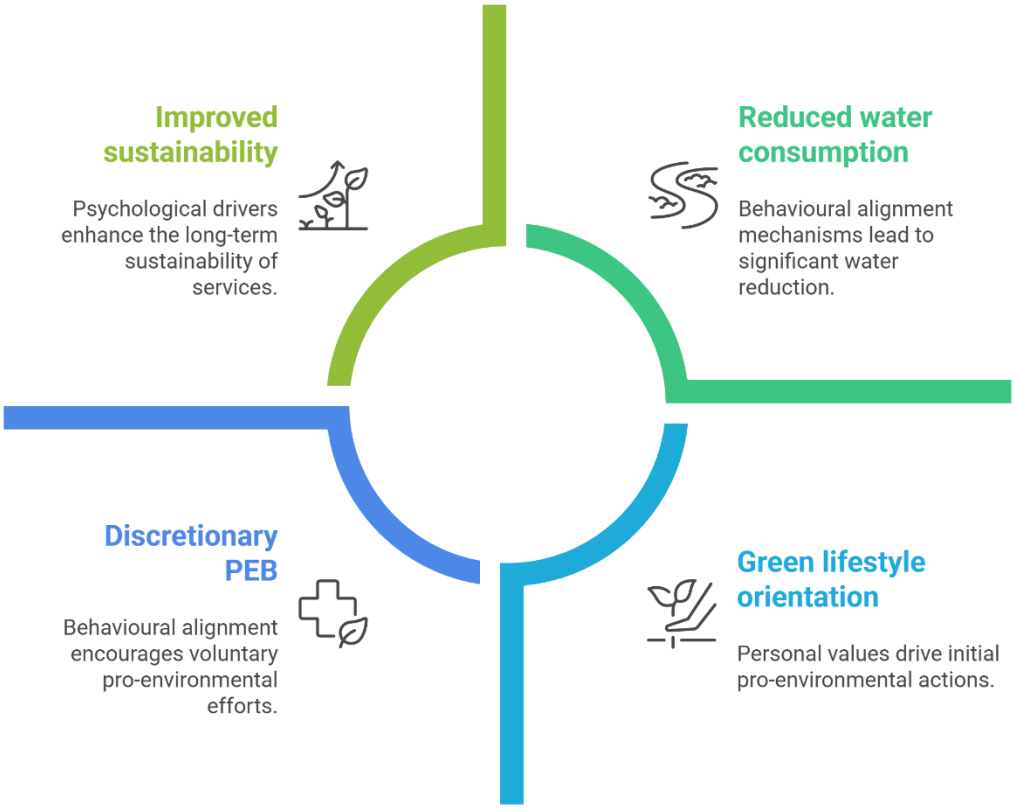

Figure 2. Behavioural pathways to sustainable renal care

Limitations and Future Research Directions

Although the body of research on pro-environmental behaviour (PEB) in organisations is increasing, the scope of applicability to healthcare practice has several limitations. Firstly, a bigger part of existing evidence has been based on cross-sectional and self-reported designs; both of which limit the possibility of making inferences to the furthest and expose them to even greater risks of

common method bias. This is quite difficult in the context of health care, where behaviour can be determined by dynamic clinical needs and organisational change. Second, the concept of healthcare and, more specifically, the sphere of renal care is not as well-studied regarding psychological sustainability, which has been predominantly discussing the corporate or general public-sector context. The evidence may therefore not translate fully to extreme controlled and risk-sensitive environment such as the dialysis units. Third, the literature in existence is geographically skewed in the high-income countries, despite the rising burden of kidney disease and environmental stressors in the low and middle-income neighbourhoods.

Future research ought to place greater emphasis on longitudinal and intervention-based research to comprehend how PEB develops and is maintained over time in renal care settings. The mixed-methods methods would yield more ecological validity and ecological insight as they would involve a behavioural audit and qualitative enquiry, along with validated psychological measures. More attention should also be paid to mediating and moderating variables, including leadership support, workload, moral norms, and clinical risk perception. Finally, renal-specific sustainability behaviour measures may have to be developed to encompass unique environmental practices and limitations of kidney care and improve the accuracy of research and its practical utility.

Conclusion

The motivation and actions of pro-environmental healthcare organisations are driven more by psychological factors than by policy mechanisms, with personal values, lifestyle orientation, and perceived behavioural capability shaping everyday sustainability practices. Evidence shows that value congruence and green lifestyle orientation exert a stronger influence on workplace pro-environmental behaviour than environmental commitment statements or green human resource management alone. This insight has particular relevance for renal care, a highly resource-intensive field in which routine clinical decisions collectively generate substantial environmental impacts. Sustainable renal care, therefore, requires a paradigm shift away from compliance-oriented approaches toward behaviourally informed organisational strategies that reflect the realities of clinical work. Embedding sustainability within professional identity, ethical standards, and supportive organisational cultures is essential for translating environmental concern into consistent practice. Importantly, environmental stewardship must be framed as complementary to patient-centred kidney care, ensuring that clinical safety and quality remain paramount. By aligning psychological motivations with organisational sustainability objectives, healthcare systems can achieve meaningful reductions in environmental burden while enhancing the long-term resilience of renal services. Such alignment positions sustainable renal care not only as an operational goal, but as a clinical responsibility and ethical imperative for advancing both planetary and human health.

References

1. Hasan A, Zhang X, Mao D, Kashif M, Mirza F, Shabbir R. Unravelling the impact of eco-centric leadership and pro-environment behaviours in healthcare organisations: role of green consciousness. *J Clean Prod*. 2024;434:139704.
2. ul Mateen A, Nisar QA, Nasir N. Fostering pro-environmental behaviours in healthcare organisations: an empirical analysis of psychological and strategic factors. *Asia Pac Manag Rev*. 2023;28(1):13–23.
3. Xu L, Cherian J, Zaheer M, Sial MS, Comite U, Cismas LM, et al. The role of healthcare employees' pro-environmental behaviour for de-carbonization: an energy conservation approach from a CSR perspective. *Energies*. 2022;15(9):3429.
4. Owusu EA, Zhou L, Sarpong FA, Sampene AK, Antwi HA, Arboh F, et al. Exploring the impact of green performance on employees' pro-environmental behaviors: a multi-group analysis from developed and emerging economies healthcare industries. *Bus Strategy Environ*. 2025;34(4):4717–4746.
5. Tessema DH, Yesilada F, Aghaei I. Enhancing pro-environmental behavior through green human resource management practices: evidence from Ethiopian private hospitals. *J Health Organ Manag*. 2025.
6. Fitri DE, Nastiti A. The effect of information, fear, and risk perceptions on pro-environmental behaviour among university students in Indonesia. *J Pengelolaan Sumberdaya Alam dan Lingkungan*. 2025;15(2):206.
7. Figueiredo T, Midão L, Rocha P, Cruz S, Lameira G, Conceição P, et al. The interplay between climate change and ageing: a systematic review of health indicators. *PLoS One*. 2024;19(4):e0297116.
8. Okoye OC. Ambient air pollution near petrochemical industries and chronic kidney disease risk: integrating citizen science within an exploratory mixed methods study [dissertation]. Edinburgh: Edinburgh Napier University; 2024.
9. Verbruggen SC, den Otter SC, Bakker J, Briassoulis G, Ilia S, Latten L, et al. Call for sustainable food systems including (medical) nutrition for hospitalised children and their families. *Frontline Gastroenterol*. 2024;15(e1):e73–e87.
10. Hassen TE, Cabases MV, Zine Eddine El Idrissi JM, Mills MD. Changes in inequality in use of maternal health care services: evidence from skilled birth attendance in Mauritania for the period 2007–2015. *Int J Environ Res Public Health*. 2022;19:3566.
11. Güntürkün P, Studte S, Winkler D, Clement M, Tan JH, Merz EM, et al. Crowding-out effects of opt-out defaults: evidence from organ donation policies. *PNAS Nexus*. 2025;4(10):pgaf311.
12. Adriana L, Bobbio A, Filippo A, Daniela T. Attitude toward online administration of tests in Italian psychologists. *Eur J Psychol Open*. 2023;82:285.
13. Oh YJ, Park S, Ryu JY. Boosting organ donation self-efficacy through AI-generated health messaging: the differential impacts of "why" vs. "how" messaging and media modality. *Health Commun*. 2025:1–10.

14. Prabowo H, Prasetyo A. Forest therapy, stress, and immune system: a health triangle. In: *Alternative Medicine – New Insights*. 2025. p. 51.
15. Pellizzari C, Marco Z. Relationship between emotional regulation, emotional intelligence and emotional response: emotional intelligence as mediator. *Eur J Psychol Open*. 2023;82(Suppl 1):539–540.
16. Shim S, Sorgente A, Lanz M, Serido J. Examining the effects of personal and sociodemographic factors on the family financial socialization process. *Eur J Psychol Open*. 2023;82:434.
17. Zairbani A, Doddaullarthi Basavaraj C, SriSai V, Manikrishna V, Jaya Prakash SK. Does waste management matter in the medical materials business performance? *Int J Prod Perform Manag*. 2025:1–20.
18. Singh A, Joshi R, Patel A, Maurya S, Shehu SA. Socio-environmental impacts of sustainable waste management. In: *Sustainable Waste Management: Challenges and Visions*. Cham: Springer Nature Switzerland; 2025. p. 275–299.
19. Dadvand P, de Vries S, Bauer N, Dayamba DS, Feng X, Morand S, et al. The health and wellbeing effects of forests, trees and green space. In: *Forests and Trees for Human Health*. p. 77.
20. Pinson M. Development of an educational toolkit for Washington State nursing professionals regarding climate-related impacts on health. 2025.
21. Sehajpal S, Rao K, Kumar S, Dahiya K. Transforming business management with AI and data-driven decision-making: insights from FemTech tools for pelvic floor muscle training among women. In: *Transforming Business Management with AI, BI, and Data-Driven Decision-Making*. Boca Raton: CRC Press; 2025. p. 161–188.
22. Grobelna A, Bogalecka M. Tourism and career development in the face of seawater threats: perspectives of tourism and hospitality students from coastal areas. *Sustainability*. 2024;16(23).
23. Zucchelli MM, Gambetti E, Giusberti F, Nori R. Use of default option nudge and individual differences in everyday life decisions. *Cogn Process*. 2024;25(1):75–88.
24. Ferrari E, Vecchi E, Mattei G, Belloli G, Diegoli G, Monte P, et al. The shape of water: preliminary data from a cluster of patients infected by *Mycobacterium saskatchewanense* in a haemodialysis setting. *Popul Med*. 2023;5(Suppl).
25. Thakur SJ, Roy H. Job embeddedness and workplace well-being: moderating role of remoteness. *Int J Organ Anal*. 2025:1–26.
26. Khurshid M, Abdullah M, Azeem M. Making the world a better place by creating eco-friendly products and customers' adoption intentions. *Pak J Human Soc Sci*. 2023;11(2):2338–2346.
27. Gea M, Previti C, Bert F, Massocco G, Moro G, Scaioli G, et al. Environmental health literacy of the Italian general population: the SPeRA study. *Popul Med*. 2023;5(Suppl):91.
28. Ferraguzzi G, Zanetti M, Mazzola P, Sandrini M, Sanvito F, Gagliardo R, et al. The role of the built environment in dementia. *Popul Med*. 2023;5(Suppl):55.
29. Christie M, Elliott D, Wilbraham S. Freedom, fun, friendship and freezing: women's perspectives of participation in open water swimming. *Sport Soc*. 2025:1–25.
30. Tawil S, Haque S, Salameh P. Mental health during COVID-19: an evaluation of academic universities' contribution. *J Multidiscip Healthc*. 2024:2053–2068.
31. Garlasco J, Koripalli M, Bridge G. Public health interventions to promote oral health in patients with type 2 diabetes: a systematic review. *Popul Med*. 2023;5(Suppl).
32. Choi J. The promotion of human rights and climate norms in the DPRK. In: *Advances in Sociology Research*. 2022. p. 183.
33. Wang Q, Farhadipour M, Leng H, Thijs T, Nys L, Ceulemans LJ, et al. Activation of bitter taste receptors regulates expression of growth differentiation factor 15 in the small intestine of patients with obesity. *Chem Senses*. 2023;48.
34. Karam S, Wong MM, Jha V. Sustainable development goals and global kidney health. *Kidney360*. 2023;4(10):1494–1502.
35. Duane B, Steinbach I, Stancliffe R, Barna S, Cameron D, de Barbieri I, et al. Improving sustainability and quality of kidney health care: the KitNewCare approach. *J Nephrol*. 2025;38(1):87–99.
36. Stigant CE, Rajan T, Barraclough KA, Miller FA. The necessity of environmentally sustainable kidney care. *Can J Kidney Health Dis*. 2023;10:20543581231166484.
37. Stigant CE, Barraclough KA, Harber M, Kanagasundaram NS, Malik C, Jha V, et al. Our shared responsibility: sustainable kidney care. *Kidney Int*. 2023;104(1):12–15.
38. Francis A, Harhay MN, Ong AC, Tummalapalli SL, Ortiz A, Fogo AB, et al. Chronic kidney disease and the global public health agenda. *Nat Rev Nephrol*. 2024;20(7):473–485.
39. Smyth B, Pippias M, Sandal S, Fung WW, Ethier I, Kelly D, et al. Green nephrology: minimizing environmental impact. *Kidney Int*. 2023;104(1):7–11.
40. Davison SN, Pommer W, Brown MA, Douglas CA, Gelfand SL, Gueco IP, et al. Conservative kidney management and supportive care. *Kidney Int*. 2024;105(1):35–45.
41. Johnston-Webber C, Bencomo-Bermudez I, Wharton G, van Kessel R, Barone S, Muntó FB, et al. A framework to assess the burden of chronic kidney disease. *Health Policy*. 2025;152:105244.
42. Hmida MB, Mechichi T, Piccoli GB, Ksibi M. Water implications in dialysis therapy. *Kidney Int*. 2023;104(1):46–52.
43. Langham RG, Kalantar-Zadeh K, Bonner A, Balducci A, Hsiao LL, Kumaraswami LA, et al. Kidney health education and literacy. *J Nephrol*. 2022;35(6):1555–1563.
44. Vanholder R, Agar J, Braks M, Gallego D, Gerritsen KG, Harber M, et al. The European Green Deal and

nephrology. *Nephrol Dial Transplant*. 2023;38(5):1080–1088.
45. Judge PK, Staplin N, Mayne KJ, Wanner C, Green JB, Hauske SJ, et al. Impact of primary kidney disease in the EMPA-KIDNEY trial. *Lancet Diabetes Endocrinol*. 2024;12(1):51–60.
46. Law JP, Pickup L, Pavlovic D, Townend JN, Ferro CJ. Hypertension and cardiomyopathy in chronic kidney disease. *J Hum Hypertens*. 2023;37(1):1–9.
47. Hsu CM, Gupta S, Tighiouart H, Goyal N, Faugno AJ, Tariq A, et al. Kidney recovery and death in COVID-19–associated AKI. *Am J Kidney Dis*. 2022;79(3):404–416.
48. Schmieder RE. Renal denervation in chronic kidney disease. *Nephrol Dial Transplant*. 2023;38(5):1089–1096.
49. García GG, Iyengar A, Kaze F, Kierans C, Padilla-Altamira C, Luyckx VA. Sex and gender differences in chronic kidney disease. *Semin Nephrol*. 2022;42(2):101–113.
50. Green JB, Mottl AK, Bakris G, Heerspink HJL, Mann JF, McGill JB, et al. Design of the CONFIDENCE study. *Nephrol Dial Transplant*. 2023;38(4):894–903.