Linking Environmental Sustainability and Healthcare: The Effects of an Energy Saving Intervention in Two Hospitals

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Abstract

Set in a real organisational setting, this study examines the challenges of implementing environmentally sustainable behaviour in healthcare. It evaluates the success of a real energy saving behaviour change intervention, based on social marketing principles, which targeted the employees of two National Health Service (NHS) hospitals. It also explores the intervention benefits for three key stakeholders: the organisation/hospitals, hospital employees and patients. A rich secondary dataset containing actual workplace behaviour measures (collected via observations) and self-reported data from employee interviews and patient questionnaires is used for this purpose. The intervention encouraged three employee energy saving actions (called TLC actions): (1) Turn off machines, (2) Lights out when not needed, and (3) Close doors when possible; which led to energy savings and carbon reduction for the two hospitals. Hospital employees reported a greater level of work efficiency as a result of engaging in TLC actions, which increased the 'quiet time' periods in both hospitals. Indirectly, employees' TLC actions also improved patients' quality of sleep (which in turn is positively associated with greater patient hospital experience satisfaction). These findings shed light on the benefits of social marketing interventions targeting energy saving behaviour change for multiple stakeholders in healthcare organisations. They also illustrate connections between environmental sustainability and social and political pillars of corporate social responsibility. Additionally,

organisational culture was highlighted as a key challenge in changing practices. To encourage long-term sustainable behaviour, this study recommends a pre-intervention assessment of infrastructure and equipment, the communication of expected benefits to motivate higher involvement of employees, the need for internal green champions and the dissemination of post-intervention feedback on various energy saving and patient indicators.

Keywords: Environmental sustainability; Healthcare organisation; Energy saving intervention; Hospital patient experience; Energy data; Corporate Social Responsibility

1 INTRODUCTION

Corporate Social Responsibility (CSR) has driven a number of organisational practices related to sustainability and research on the adoption of environmental sustainability for businesses and its effects has received increasing recent attention in academia (Cramer et al. 2006; Lueg et al. 2015; Walker et al. 2015). However there is considerable scope for further examination (Lo et al. 2012a; Young et al. 2013). Strategically, sustainability within CSR practices and organisations have been motivated by reducing cost, increasing operational efficiencies, building competitive advantage and increasing reputation, which can result in favourable consumer responses, attractiveness to investors, employee engagement and commitment amongst many others (Lindgreen & Swaen 2010; Aguinis & Glavas 2012). While multiple sectors are engaged in sustainability, and motivated by any number or combination of these strategies (Sharma & Sharma 2011), it is clear that one size does not fit all in terms of sustainability practices (Manika et al. 2015) and what may work in one industry is not certain to work in another. Indeed, sustainability practices may be problematic in certain industries due to their particular features, products/services and nature of the industry.

Healthcare is a "business unlike other businesses" (McCurdy 2002: 532) and where sustainability choices could be affected by its unique features such as service orientation, its status as a public/social good and its environment with distinctive features, such as room layouts, sound level, lighting, and temperature (Leino-Kilpi et al. 2001). Additionally, the strategic focus and main motivator for sustainability and CSR practices within healthcare, especially in the case of the UK National Health Service (NHS), is cost saving. In the NHS, this strategic focus has developed due to a 'plague' of reorganisations focused on attempts to control resource consumption, the lack of financial resources and increasing complexity and size (Tudor 2013). While the challenge and importance of sustainable hospitals has been highlighted in the popular press (HFMA 2013; Hamilton 2008), the effects of adopting eco-efficient initiatives in healthcare, has been researched very little (Siebenaller 2012). Academic research on environmental sustainability in healthcare has focused on recycling and waste management (Tudor et al. 2007; 2008; Tudor 2013), while energy saving in the workplace has received academic attention mainly in other industries (Pérez-Lombard & Pout 2008). Therefore, the primary objective of this study is to fill this research gap in the academic literature and evaluate the success of an energy saving intervention in two NHS hospitals in the UK.

Most energy saving schemes within healthcare have been focusing on technical solutions, such as low watt light bulbs, retrofit insulation, double glazing windows, and improving heating controls, among others, to reduce energy consumption in buildings and associated costs (Morgenstern et al. 2016). However, such schemes may have potential negative consequences for patient care provision (Wicks 2002) as they result in delays in daily operations, additional costs, and disruptions associated with new infrastructure (Grose & Richardson 2013). Additionally, managers are reluctant to implement them due to a lack of trust in their effectiveness and uncertainty about the impacts on the reputation of their organisations (Neven et al. 2014). However, changes in user behaviour in non-domestic buildings have been increasingly recognised in academia and practice as having potential for energy savings (Banks et al. 2012; Jeffries & Rowloands-Rees 2013). Therefore, this paper examines a behaviour change social marketing intervention encouraging energy saving actions among employees, which could potentially help hospitals and the NHS become more environmentally sustainable, while also reducing operational costs. Little is known to date about the effectiveness of such interventions (Morgenstern et al. 2016).

This study is set in a real organisational setting and uses a real intervention (called TLC) encouraging three employee energy saving actions: (1) Turn off machines, (2) Lights out when not needed, and (3) Close doors when possible. Within hospitals, lighting usage accounts for the largest percentage of energy consumption (36%), followed by the use of medical equipment (34%) (Saidur et al. 2010) and in the NHS specifically, 22% of CO2 emissions are a result of energy usage in buildings (Tudor 2013). Thus, energy saving actions such as, turning off machines, lights out when not in use, and closing doors to stabilise temperature (i.e., TLC actions), in a healthcare setting can reduce carbon footprint and associated costs with energy consumption.

The healthcare system however, includes various key stakeholders with diverse needs (Vallance 1996; Pouloudi 1997) and "for health care organisations, a significant ethical challenge is to determine how to fulfil institutional responsibilities to patients, physicians and other health care professionals….and the community" (Gallagher & Goodstein 2002: 433), while also reducing operational costs (Siebenaller 2012). Desjardins (2010) notes that potential and existing connections between environmental sustainability and social and political pillars of CSR (in this case patient welfare and wellbeing) are worthy of attention, and provide a different strategic focus for healthcare organisations than the current focus on cost savings. Therefore, the potential wider environmental

responsibility effect on activities and the integration between the pillars of CSR must be carefully considered and understood (Enderle 2010). Aside from the direct benefits of energy saving behaviour change social marketing interventions for the hospitals/NHS (i.e., energy savings and cost reduction), such interventions encouraging TLC energy saving actions among hospital employees could also directly benefit employees who engage in these actions. For example, TLC actions could result in noise reduction, and increase quieter times within the hospitals, thus allowing employees to work more efficiently and ultimately increase employee satisfaction with the workplace. TLC energy saving actions that hospital employees engage in also have the potential to indirectly benefit patients. Aside from the fact that there is a positive link between hospital employee satisfaction and patient experience (Peltier et al. 2009), TLC actions themselves carried out by employees could improve patient experience indicators such as quality of sleep due to a reduction of bright light disturbance (Lei et al. 2009) and as a result increase patient hospital satisfaction (Naidu 2009). Thus, a secondary objective of this study is to explore the benefits of such energy saving behaviour change social marketing interventions on three key healthcare stakeholders: the hospitals/NHS, hospital employees and patients.

A rich secondary dataset containing actual workplace behaviour measures (collected via observations) and self-reported data from employee interviews and patient questionnaires, allow us to explore these potential benefits of the TLC intervention for hospital employees and patients, going beyond prior studies that focused on organisational benefits of environmentally-friendly initiatives.

To the authors' knowledge, this is the first study that uses a social marketing approach to examine an environmental intervention with healthcare. Additionally, this study goes beyond cost saving as a strategic focus. Through this approach, the present research links the environmental and social dimensions of CSR. Several practical recommendations are made regarding the implementation of energy saving CSR initiatives and measures, reflecting national and global endeavours for reducing carbon emissions (Gerstlberger et al. 2014), along with the consideration of organisational factors and non-financial incentives needed to enhance employees' engagement with energy saving behaviour.

2 LITERATURE REVIEW

2.1 Employee Environmental Behaviour, CSR and Social Marketing Interventions

While the environmental behaviour of households has been studied extensively, the environmentally sustainable behaviour of employees within organisations, and the use of social marketing campaigns/interventions delivered during working hours has been studied very little (Lo et al. 2012a). However, current work in this area suggests that 'one size does fit all' (Manika et al. 2015) and that each type of industry differs in their motivations for and potential consequences of an intervention. The literature has also focused on a range of behaviours with waste management/recycling being the most popular (Ludwig et al. 1998; Marans & Lee 1993; McDonald 2011). Moreover, studies outside the care-related industries have researched climate control (Lo et al. 2012b), computers, lighting and energy usage (Scherbaum et al. 2008; Carrico & Riemer 2011) amongst others. However, caution should be exercised in assuming that the antecedents and concomitants of any particular behaviour are the same or even similar (Vinning & Ebreo 2002; Steg & Vlek 2009). For example, past analyses have highlighted that recycling is not strongly related to energy, water conservation (Berger 1997) or household purchasing behaviour (Ebreo & Vinning 1994).

Studies on employee environmental behaviour have also focused on a wide range of antecedents and barriers, both individual and organisational (Hoffman 1993) including: attitudes (Scherbaum et al. 2008; Young et al. 2013), support and incentives (Smith & O'Sullivan 2012; Young et al. 2013), knowledge and awareness (Rothenberg 2003), norms (Carrico & Riemer 2011), self-efficacy (Smith & O'Sullivan 2012), organisational commitment (Andersson et al. 2005), organisational focus (Tudor et al. 2008) and the environmental behaviour of the organisation (Manika et al. 2015), amongst others. While studies have taken place in a number of industry types such as general office environments (Grensing-Pophal 1993), industrial and retail firms (Shippee & Gregory 1982), council/government (Gregory-Smith et al. 2015), academia (Ludwig et al. 1998), tourism (Chou 2014) and even comparisons across industries (Manika et al. 2015; Walker et al. 2015), there are very few studies on organisational practices related to sustainability in healthcare.

To date two studies have focused on waste reduction and recycling sustainability practices within the UK National Health System (NHS). Initially, Tudor et al. (2007) used self-reported (i.e. survey-based) and actual behaviour measures (i.e. waste bin data) to assess sustainable waste practices in the NHS. They found that employee environmental behaviour is complex and that waste management beliefs and perceived benefits of recycling were significant predictors of waste bin practices, unlike subjective norms, behavioural control and awareness. Aside from the fact that the Theory of Planned Behaviour was not fully supported, Tudor's et al. (2007) study only focused on one type of NHS

stakeholders (i.e. employees), which can be seen as a limitation within a healthcare context. Tudor et al. (2008) further assessed sustainable waste practices in the NHS, using not only questionnaires and waste bin analysis, but also participant observation and interviews. A major finding was that organisational factors were found to drive employee behaviour, while they also act as barriers to behaviour change. Particularly, organisational focus was a key predictor of behaviour as it impacted on attitudes and beliefs of staff resulting in a high degree of apathy and a belief that sustainability issues were secondary to the core work priorities. On the other hand, it was found that the strong bureaucratic organisational structure and the low priority of sustainability played a significant part in this and that organisational culture in terms of group dynamics, awareness and norms (unlike in their earlier work), did predict behaviour. Based on the findings of both studies, a key lesson learned is that any policies regarding sustainable behaviour in healthcare must address issues around the structure and culture of the organisation as well as individual variables such as beliefs, attitudes and motivations.

Given that environmental behaviour and sustainability policies in healthcare have mainly focused on waste management and cost saving (Tudor 2013), this paper contributes to limited prior research on energy saving initiatives and specifically, behavioural social marketing interventions targeting hospital employees; these have been studied very little (Morgenstern et al. 2016). Social marketing is an approach to achieve and sustain behavioural goals on a range of social issues and provides a mechanism for tackling social problems by encouraging people to adopt certain behaviours (Lee & Kotler 2011). Social marketing interventions and campaigns have been used to encourage environmental behaviour change (Kennedy 2010; McKenzie-Mohr 1994; McKenzie-Mohr et al. 2011). Behaviour change social marketing interventions encouraging energy saving actions among hospital employees is a strategy that does not need a new infrastructure and, without much disruption of daily operations, could potentially help hospitals and the NHS become more sustainable and environmentally-friendly, while also reducing operational costs.

2.2 Hospital Employees' Perceptions of Energy Saving Interventions and Related Research Questions

Beyond the energy saving benefits for the NHS and the hospitals, the perceived benefits of social marketing interventions promoting behaviour change among hospital employees, should also be explored. Healthcare is different to many industries as "healthcare is an extraordinarily people-centric industry…the patient consumes services to his or her physical body, nearly all treatments and procedures are administered by people" (Peltier et al. 2009: 2). In this way there are similarities with a range of other service organisations, such as hotels and hospitality. Here employees are often the main target for behaviour change interventions and CSR initiatives due to the close relationships between employees and consumers (Chou 2014; Coles et al. 2011) and individual behaviour is often seen as being at the centre of change processes (Arena & Chiaroni 2014). Hospital employees are, therefore, key to the successful provision of healthcare services and, thus, healthcare organisations need to ensure that they respond to medical staff's suggestions and perceptions quickly to ensure quality of care (Mwachofi et al. 2011). Peltier et al. (2009) also note that there is a positive link between hospital employee satisfaction and patient experience. Therefore, employees' perceptions of the energy saving behaviour change social marketing intervention are vital within healthcare, not only for engaging in energy saving actions and reducing carbon emissions and costs, but also for ensuring that patient satisfaction with the hospital experience (i.e. quality of care) is not negatively affected as a result of such initiatives. This has parallels with the suggestion that high quality service standards required in the services industry are likely to be a key determinant of the uptake of energy saving behaviours (Wells et al. 2016).

This study also responds to calls for further research on employees (Rupp et al. 2013; Akremi et al. 2015) by exploring hospital staff's perceptions of such energy saving interventions in terms of their perceived benefits for employees, patients and the organisation. Hospital employees, like any other employees, are assumed to take notice of CSR actions (Rupp et al. 2013) but their reactions to CSR initiatives are considered dependent on whether they perceive the initiative to be important to them or not (Glavas & Godwin 2013). Promislo et al. (2012) also note that beliefs about ethics and social responsibility, including CSR initiatives, can affect individual well-being.

Thus, based on the aforementioned literature and the focus on the TLC energy saving intervention among hospital employees, the following research questions are explored:

RQ1: To what extent were hospital employees aware of the TLC energy saving intervention and the energy saving actions that were encouraged?

RQ2: To what extent were hospital employees personally involved with the TLC energy saving intervention?

RQ3: What were the perceived benefits of the TLC energy saving intervention for employees, patients, and the organisation itself, from hospital employees' perspective?

RQ4: What were the perceived challenges of the TLC energy saving intervention, from the hospital employees' perspective?

RQ5: To what extent did the hospital employees perceive the TLC intervention to be successful and what were the perceived intervention outcomes?

These research questions reflect common stages used to assess the development and success of social marketing interventions (Lee & Kotler 2011): awareness (of the intervention; its importance also noted in Young's et al. (2013) employee pro-environmental behaviour framework), interest (engagement/involvement of the audience), perceptions of benefits and barriers to action (challenges), and behaviour change.

Lastly, given that perceptions may be inaccurate (Akremi et al. 2015), this study also benefits from measures of actual behaviour via observations and energy data contained within the secondary dataset used in this paper. These can be regarded a superior method since past research has noted the gap between self-reported and actual behaviour (Barker et al. 1994).

2.3 Could Energy Saving Actions Affect Hospital Patients' Experience Indicators?

As noted in the introduction, hospital employees' energy saving actions encouraged by behavioural social marketing interventions like the one examined in this paper (i.e., Turn off machines, Lights out when not needed, and Close doors when possible) have the potential to indirectly affect patients' hospital experience. For example, turning off lights when not needed could save actual energy, as well as enhance patients' quality of sleep due to a reduction of bright light disturbance (Lei et al. 2009). This research focuses on four patient experience indicators, potentially affected by energy saving TLC actions: 1) quality of sleep, 2) level of privacy; 3) thermal comfort; and 4) overall satisfaction with hospital experience. These indicators are commonly included in hospital patient experience surveys used worldwide (CMS 2014; Jenkinson et al. 2002). Below relevant prior literature on patient experience indicators and how these may be affected by TLC energy saving actions carried out by employees is discussed and associated hypotheses are advanced.

Quality of sleep is important as sleep aids patients' recovery and may affect patients' mood, memory and cognition (Lei et al. 2009). Hospital patients generally require more sleep due to their health status (Lei et al. 2009). Among the potential factors, which may affect quality of sleep include: noise from machines, night-time nursing, temperature, bright lights (Lei et al. 2009) and the presence of other people (Pimentel-Souza et al. 1996). Patients in intensive care units especially are significantly affected by sleep disturbances caused by both environmental and non-environmental factors (Bihari et al. 2012) and specifically noise from phones and medical equipment alarms were found to be key disturbing factors for sleep in this patient cohort. Bihari et al. (2012) note that sleep disturbance is multifaceted, meaning it can vary from complete awakening to sleep fragmentation and arousal, all of which can lead to poor sleep quality.

Given the limited control patients have over the hospital environment, they may experience loss of privacy, which can also disrupt patients' sleep patterns (Leino-Kilpi et al. 2001) (see Parrott et al. 1989 for a review). Lei et al. (2009) suggested future research should examine interventions that may enhance quality of sleep, by minimising sleep disturbing factors. Our study fills this gap and focuses on energy saving actions that hospital staff can take to reduce energy consumption, which may also enhance quality of sleep, including privacy, through quieter times.

Thermal comfort, which influences the energy consumption of a building (Djongyang et al. 2010), has received considerable attention in healthcare literature with studies focusing on environmental parameters (i.e., indoor temperature, humidity in hospitals), and on thermal discomfort and sensation of patients and staff (Khodakarami & Nasrollahi 2012). Patients with worse health expect a warmer indoor environment, as this can help with the healing process (Hwang et al. 2007). Therefore, patients' thermal sensation is affected by their health status (Verheyen et al. 2011). For people affected by illnesses, the optimal temperature is normally higher than the one for healthy people (Hwang et al. 2007). Moreover, a comfortable thermal environment has been found to contribute to stabilization of patients' moods (Hwang et al. 2007).

Another factor that can affect patients' thermal comfort is represented by the so-called acclimatisation effects, which relate to the differences between home and hospital thermal levels, as perceived by patients (Hwang et al. 2007). While the tendency might be for patients to counteract discomfort from the indoor ward climate by adding clothing insulation (Hwang et al. 2007) this might not always be possible in hospital environments and some patients might not take these adaptive steps by themselves due to health issues, disabling conditions or lack of knowledge. The literature also points

out that the type of hospital rooms (single bed vs. multi-bed/bay) rooms and the number of beds in a ward, which may differ from one hospital to another, may also affect thermal sensations of patients (Yau et al. 2011). Additionally, the seasons and related temperature variations may affect the thermal comfort of hospital patients (Hwang et al. 2007).

One of the key challenges to ensuring thermal comfort to hospital patients is the fact that temperature settings need to take into account requirements for different hospital users (e.g. patients, medical staff) who may have different needs in terms of what is considered a confortable environment for them (Verheyen et al. 2011). Moreover, Verheyen et al. (2011) note the need to control for temperature at room level and even to ensure individual adjusting that would take into consideration each patient's health and physical strength, where possible.

Therefore, the above literature highlights the need for improving thermal comfort, with closing doors being one of the measures that can be taken to stabilise temperature. Closing doors was one of the actions included within the TLC environmental intervention examined in this paper.

Lastly, overall patient satisfaction with the hospital experience can enhance hospital image and benefit the healthcare provider's long-term success (Naidu 2009). Patient satisfaction is an evaluation of distinct healthcare dimensions (Linder-Pelz 1982), and is affected by many variables (see Naidu (2009) for a review). Patient satisfaction is considered challenging to measure and explain due to being a "multi-dimensional healthcare construct affected by many variables" Naidu (2009: 366). Privacy (Silvestro 2005) and comfort (e.g. thermal comfort, sleeping comfort) (Naidu 2009) have been found to affect significantly patients' satisfaction. This is consistent with Butler's et al. (1996) study that concluded patients' service quality perceptions are primarily affected by quality of the facility (e.g. the hospital room, ward) and the staff performance. Both of these two factors are variables affecting the quality of sleep, privacy and comfort of patients. Thus, we expect that patient satisfaction could indirectly be affected by energy saving actions, through improvements in quality of sleep, privacy and comfort of patients.

Based on the factors included and measured in the secondary dataset associated with the TLC energy saving intervention examined in this paper, and the aforementioned literature review, we hypothesise that:

H1: a) Patients' perceptions of quality of sleep, **b)** privacy, **c)** thermal comfort and **d)** overall satisfaction with the hospital experience will improve after the energy saving intervention, as a result of hospital employees engaging in energy saving actions.

The literature review on patients' hospital experience indicators also supports the following:

H2: Patients' perceptions of **a)** quality of sleep, **b)** privacy, and **c)** thermal comfort will be positively and significantly related to overall satisfaction with hospital experience.

H3: Patients' perceptions of **a)** privacy and **b)** thermal comfort will be positively and significantly related to perceptions of quality of sleep.

These hypotheses (H2-H3) are expected to hold both in pre and post-intervention data, even though they have not been empirically tested before. Thus, to investigate this further we propose an alternative hypothesis (i.e., H4) and test it via a multigroup SEM analysis with the intervention as the grouping variable: Group 1: Pre-intervention & Group 2: Post-intervention.

H4: H2 to H3 will be moderated by the energy saving intervention.

This concludes the summary of prior literature, which has explored the benefits of an energy saving behaviour change social marketing intervention for three key healthcare stakeholders: the organisation/hospitals, hospital employees and patients. Next the methodology will be discussed.

3 METHODOLOGY

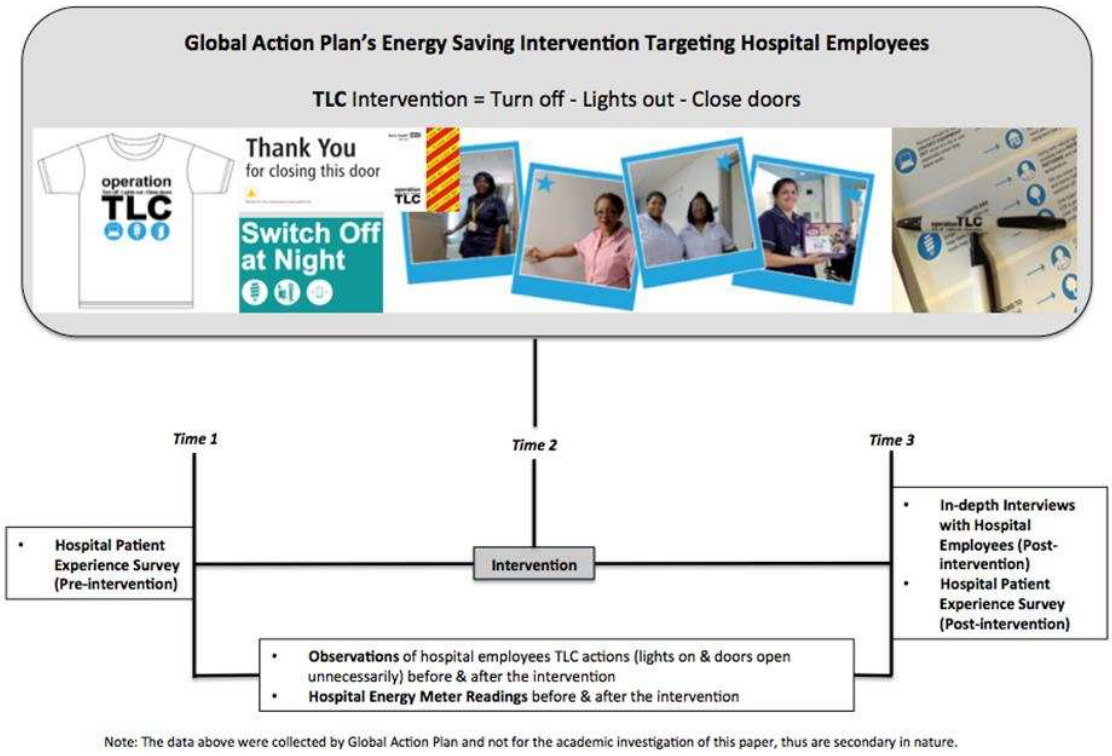
This paper uses an energy saving social marketing intervention conducted within a real (i.e. non-laboratory) setting represented by two Barts Health Trust hospitals (part of the NHS). The data used in this paper is drawn from a rich secondary dataset containing actual workplace behaviour measures (collected via observations) and self-reported data from employee interviews and patient questionnaires, which were used to explore the benefits of the intervention for the organisation, hospital employees, and patients. The intervention was developed and carried out by Global Action Plan (GAP) as a leading environmental charity, which also collected the secondary data analysed in this paper. Figure 1 gives an overview of the TLC intervention, which is detailed subsequently, and the secondary data available from GAP with the related timeline.

3.1 The TLC Intervention

The TLC intervention designed and delivered by GAP, encouraged three energy saving actions among hospital employees: Turn off machines, Lights out when not needed, and Close doors when possible. These actions were selected by GAP and were seen to potentially reduce the hospitals' energy consumption. It was also considered that these actions could easily be carried out by employees and would imply minimal interference with medical treatments and hospital requirements. The intervention was delivered via multiple communication platforms. Face to face discussions were carried out with employees using electronic tablets as props to help hospital employees become familiar with energy saving actions. Posters and stickers were placed on doors throughout the hospital, and pens and t-shirts were distributed; as reminders of energy saving actions.

Besides being part of the same organisation (Barts Health Trust), which regulates aspects of the NHS hospitals' daily operations and infrastructure, both hospitals which received the TLC intervention were located in London, each hospital had a minimum of six buildings, a capacity of more than 300 beds with both single and multi-bed (bay) rooms and had an Accident and Emergency Unit. Due to these similarities, the two hospitals are used in this paper as one organisation and one sample for the analysis. Both hospitals were simultaneously exposed to the same TLC intervention.

Figure 1: Timeline and Secondary Data Used



Note: The data above were collected by Global Action Plan and not for the academic investigation of this paper, thus are secondary in nature.

3.2 Secondary Data Used and Associated Analyses

The secondary data used in this paper were initially collected by GAP employees who used a concurrent longitudinal mixed methods approach to gather data from different stakeholders. This methodological approach allowed the triangulation of diverse perspectives on the benefits of the TLC intervention (Foss & Ellefsen 2002), while being "more flexible, integrative, and holistic" (Powell et al. 2008: 306). As indicated in Figure 1, this secondary dataset included: energy data in aggregate form and observations (i.e. lights turned on and doors left open unnecessarily) before and after the intervention, employee self-reported data after the intervention, and patient self-reported data before and after the intervention, which respectively shed light on the benefits of the TLC intervention for the organisation, the hospital employees and the patients. Figure 1 also contains the timeline for the particular data collection carried out by GAP.

This secondary data were not designed nor collected with an academic approach in mind. This has restricted the analyses and findings reported here. However, in addition to previously highlighted contributions, this organisation-situated intervention overcomes key weaknesses related to laboratory academic research (i.e. lack of realism, artificiality, and generalisability; Levitt & List 2007). Moreover,

actual workplace behaviour measures (i.e. observations of energy saving actions and energy data) contained in this secondary dataset enhance the contribution of this study. Below, we provide additional information on how the specific data used were collected by GAP and how we analysed the data in connection to the listed research questions and the proposed hypotheses.

3.2.1 Using energy data and observations to examine the impact of the intervention on energy consumption

To achieve the primary objective of this paper (i.e., RQ1 –to evaluate the success of an energy saving social marketing intervention in a healthcare setting), energy data in aggregate form and observational data (i.e., lights turned on and doors left open unnecessarily) before and after the TLC intervention, collected by GAP, were used. Energy data in aggregate form serves as a measurement of actual environmental workplace behaviour to examine whether or not the intervention was successful in reducing energy consumption. Such measurements improve the study's reliability, given the discord between self-reported and actual measures of behaviour as noted in past environmental research (Chao & Lam 2009; Huffman et al. 2014), and help reduce the issue of common method variance in cross-sectional survey research (Rindfleisch et al. 2008). Given the longitudinal nature of the secondary dataset, our findings overcome sources of common method biases, such as measurement context effects (Podsakoff et al. 2003). Thus, the energy data used in this study provides a distinctive contribution to the paper and allowed us to calculate the energy savings as a result of the intervention and associated cost savings.

In addition, observational data of employees' actual environmental behaviour: 1) doors left unnecessarily open and 2) lights left unnecessarily switched on, were collected by trained GAP staff pre and post-intervention at several times during the day and night, at approximately the same time, each day/night, to ensure consistency and comparability. This data was used in this paper to examine the success of the TLC intervention in changing employees' energy saving behaviour (in addition to subsequent analyses – dividing wards of hospitals in low and high energy saving adopters).

3.2.2 Using employee data from post-intervention interviews to explore hospital employees' perceptions of the TLC intervention (RQ1-RQ5)

A total of 14 interviews with employees were collected after the intervention, by GAP, which contained information regarding the level of awareness of and involvement with the intervention and the perceived benefits of the intervention, as well as recommendations about future interventions. Thus, this employee data were appropriate for the investigation of RQ1 to RQ5 regarding employees' perceptions of the benefits of the energy saving intervention for employees, patients and the organisation.

The employee data included 4 male and 10 female participants (representative of the fact that 10.1 times more women work as nursing and midwifery professionals than men in Europe and the US (OECD 2006). The interviewees had various roles such as: ward manager, healthcare support officer, nurse, discharge coordinator, housekeeper, education centre coordinator, and office manager clinical lead. Their age ranged between 23 and 60 years old and working experience within the hospital varied from 2 to 23 years. This cohor provided an adequate representation of hospital employees. The interviews were recorded using the Recordium iPad app by GAP and carried out as a short intercept interviews due to the busy nature of the wards and employees' job tasks (a method increasingly used in health-related research; Tse et al. 2014).

The academic team transcribed and coded the recordings of the interviews using a semi-inductive approach, a common approach in health-related research (e.g. Wells et al. 2004; Fortin et al. 2010), with some themes related to the research questions (RQ1 to RQ5) and other new themes also emerging from the data (Thomas 2006).

3.2.3 Using hospital patient data from pre and post-intervention questionnaires to explore the indirect benefits of TLC actions on patient experience indicators (H1-H4)

To examine the indirect benefits of TLC actions carried out by hospital employees, as a result of the energy saving intervention, on patient experience indicators as per hypotheses H1 to H4, the academic team used the pre and post-intervention patient data collected by GAP via questionnaires. The questionnaires examined patient experience indicators, which could be affected by employees' TLC actions and thus are appropriate for examining H1 to H4.

The pre-intervention questionnaire included 70 hospital patients (Hospital 1: n=30; Hospital 2: n=40) and the post-intervention questionnaire included 88 hospital patients (Hospital 1: n=29; Hospital 2: n=59). All questionnaires were administered in paper and pencil format by GAP staff. Some were completed by patients and others completed with the help of the charity's representatives, when

assistance was needed. Verbal consent was given and questionnaires were filled in anonymously; ensuring compliance with ethical procedures, increasing individuals' participation and reduction of social desirability bias (c.f. Richman et al. 1999). Different patients were used for the pre and post-intervention data collection (see Table 1).

Table 1: Patient Sample Demographics and Nights in the Hospital

		Pre-Intervention Sample		Post-Intervention Sample	
		Frequency	**Percentage**	**Frequency**	**Percentage**
Gender		(N=66)		(n=85)	
	Male	23	34.8%	41	48.2%
	Female	43	65.2%	44	51.8%
		(N=67)		(n=87)	
Age	<18	3	4.5%	4	4.6%
	18-25	5	7.5%	6	6.9%
	26-35	13	19.4%	6	6.9%
	36-45	7	10.5%	9	10.3%
	46-55	8	11.9%	10	11.5%
	56-65	11	16.4%	15	17.2%
	66-75	11	16.4%	16	18.4%
	76+	9	13.4%	21	24.2%
Nights In Hospital		(N=65)		(N=86)	
	1-5 nights	37	56.9%	40	46.6%
	6-10 nights	8	12.3%	21	24.4%
	More than 10 nights	20	30.8%	25	29.0%

Even though the patients before and after the intervention were not the same, which poses some limitations, the use of distinct samples before and after a pro-environmental intervention has been used before to examine its effects (e.g. Gregory-Smith et al. 2015) and is acceptable under certain conditions. Given the hospital setting where this secondary data came from, having different hospital patient participants with the same characteristics before and after an intervention is acceptable, since there is a quick turnaround time in hospital admissions and discharge after treatment. In addition, the intervention was aimed at hospital employees not patients, which limits some of the obstacles and limitations of not having matched samples before and after the intervention. As noted, we expect that the TLC actions themselves, not the intervention, would indirectly affect patient experience indicators as per H1.

To ensure that potential differences in patient experience indicators before and after the intervention were not due to the influence of patients' individual/demographic variables, it was important to demonstrate that the two groups were comparable (Rubin & Babbie 2011; Gregory-Smith et al. 2015) in terms of age, gender and number of nights in the hospital. No significant differences were found between the patients that completed the pre-intervention questionnaire and the those that completed the post-intervention questionnaire in terms of gender ($\chi 2(1)=2.73$, $p>.05$), age ($F(1,152)=3.42$, $p>.05$), and nights in the hospital ($F(1,149)=.36$, $p>.05$). These results show that the patients before and after the intervention had similar characteristics, and thus could be used to examine H1 to H4.

Both pre- and post-intervention questionnaires contained the same questions (continuous variables measured on a 5-point Likert scale - see Tables 2 and 3). The hospital name, ward and room type (single or bay/multi-bed room) was also recorded. All multi-item scales included in the questionnaires had a Cronbach's Alpha above .78, signifying reliability. Because the questionnaires were designed by the charity, not all the variables were measured as multi-item scales. This approach is increasingly accepted in the academic literature and appropriate under certain conditions such as experiments in organisations (see Manika et al. 2015) and in service intensive industries front line employees will have little time away from their role and hence shorter questionnaires are often the only option. Composite mean scores were calculated by the academic team for the multi-item scales. The dataset also contained information on whether or not patients talked to hospital employees about quality of sleep, thermal comfort and privacy.

Table 2: Variables, Measures and Cronbach's Alpha

		Pre-Intervention Sample			Post-Intervention Sample		
Variables		**N**	**M(SD)**	**Composite Descriptives &Cronbach Alpha**	**N**	**M(SD)**	**Composite Descriptives &Cronbach Alpha**
Quality of Sleep Composite	On the scale of one (1-Extremely disturbing) to five (5-Not at all disturbing), please select the number that best describes the level of disturbance you experienced, during the night whilst visiting the hospital from the following:						
	Noise from machines	65	3.69 (1.22)	a=.79 N=61 M=3.78 SD=.90	81	3.86 (1.11)	a=.79 N=68 M=4.14 SD=.71
	Noise from outside your room	63	3.97 (1.10)		73	4.18 (.91)	
	Noise from fellow patients	69	3.26 (1.44)		77	3.78 (1.26)	
	Noise from employees at night	67	3.79 (1.27)		75	4.12 (1.01)	
	Light from the corridor	65	4.17 (1.15)		75	4.31 (.94)	
	Regarding your level of comfort due to room temperature levels, on a scale of one (1-Strongly disagree) to five (5-Strongly agree), please indicate your level of agreement with the statements below:						
Thermal Comfort	The room temperature made me feel warm enough	65	3.69 (1.25)	n/a	76	3.78 (1.01)	n/a
Perceived Privacy Composite	On a scale of one (1-No privacy at all) to five (5-A lot of privacy), please select the number that best describes the level of privacy you experienced during the following times.						
	During discussions with doctors there was...	54	3.89 (1.21)	a=.92 N=49 M=3.93 SD=1.04	71	4.14 (1.03)	a=.89 N=65 M=4.09 SD=.87
	During examinations there was...	55	4.38 (.91)		72	4.49 (.75)	
	During personal time during the day there was...	53	3.77 (1.32)		74	3.85 (1.06)	
	During personal time during the night there was...	51	3.90 (1.27)		71	4.17 (1.12)	
	During visiting time there was...	51	3.71 (1.35)		71	3.82 (1.10)	
Satisfaction with Hospital Experience Composite	On the scale of one (1-Strongly disagree) to five (5-Strongly agree), please select the number that best describes your level of agreement with the following statements, related to privacy, quality of sleep and room temperatures.						
	I am satisfied with the service provided during my stay at the hospital	55	4.07 (1.03)	a=.92 N=48 M=3.87 SD=1.05	74	3.95 (1.10)	a=.94 N=66 M=3.84 SD=1.08
	My expectations have been met	55	3.87 (1.09)		72	3.89 (1.10)	
	Compared with other hospitals, the level of satisfaction was high	50	3.66 (1.17)		66	3.71 (1.16)	

All Kaiser–Meyer–Olkin values for each multi-item scale were between .5 and 1, indicating the appropriateness of the Exploratory Factor Analyses. Bartlett's tests of sphericity were significant ($p \leqslant .001$) with changes in eigenvalues, indicating a one-factor solution for each scale. Factor loadings were significant and close to each other, therefore, all multi-item scales were reliable and valid, for both the pre and post-intervention data. Composite scores of the latent variables quality of sleep, perceived privacy and satisfaction with the hospital experience were then used for all sub-sequent analyses to examine H1 to H4.

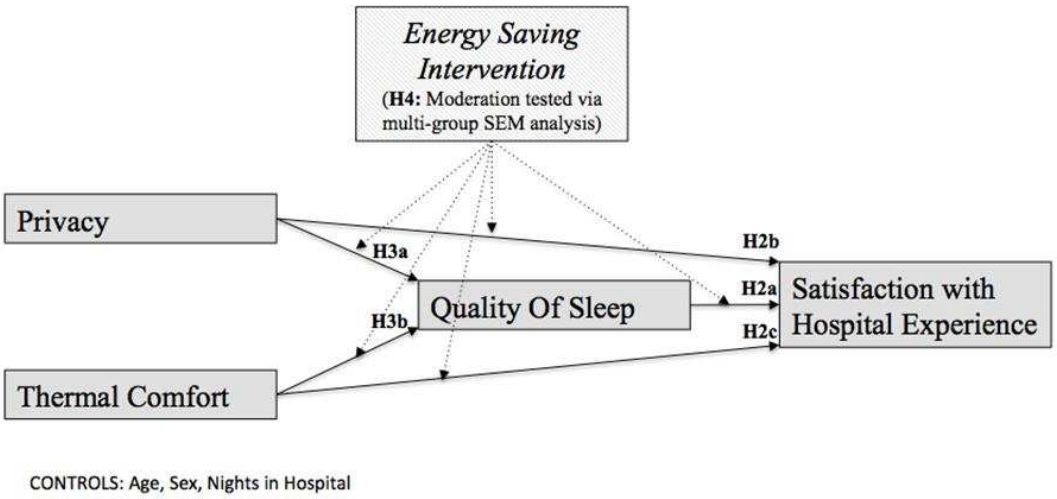
Table 3: Patients who Talked to Hospital Employees about Quality of Sleep, Room Temperature and Privacy

		Pre-Intervention Sample			Post-Intervention Sample		
		N	Frequency	Percentage	N	Frequency	Percentage
Did you ask any employee(s) for any changes (e.g., medications, extra pillows, changing the bed position) to help increase the **quality of your sleep?**	**Yes**	65	34	52.3%	85	38	44.7%
	No		31	47.7%		47	55.3%
Did you ask any employee(s) for any changes (e.g., extra blankets, turn up or down heating) to help increase the quality of your **thermal comfort?**	**Yes**	67	23	34.3%	75	21	28.0%
	No		44	65.7%		54	72.0%
Did you talk to any employee(s) about any **privacy concerns** that you experienced during your visit?	**Yes**	54	3	5.5%	71	1	1.4%
	No		51	94.5%		70	98.6%

H1 was examined via chi-squares and t-tests computed on SPSS 22. It should be noted that data for single rooms and bay/multi-bed rooms were explored separately given that closing doors (C) is not permitted in bay/multi-bed rooms. H2 and H3, were examined using a structural equation modelling approach (SEM) (Mplus 7 software) with observed variables (i.e., the composite scores of the latent variables) as per Manika et al. (2015) before and after the intervention separately. This was done to explore how patient experience indicators relate to overall patient satisfaction, and which indicator is the most important predictor of satisfaction with hospital experience. H4 was then examined using the combined pre and post-intervention patient data and a multi-group SEM analysis to test if relationships

between patient experience indicators (H2 and H3) vary before and after the intervention (H4). The overall SEM model examining H2 to H4 is depicted in Figure 2. The aforementioned analyses controlled for demographics and number of nights in the hospital (given that socio-demographic factors may affect patient experience indicators – Haiyan et al. 2011).

Figure 2: SEM Model Testing H2 To H4



4 RESULTS AND DISCUSSION

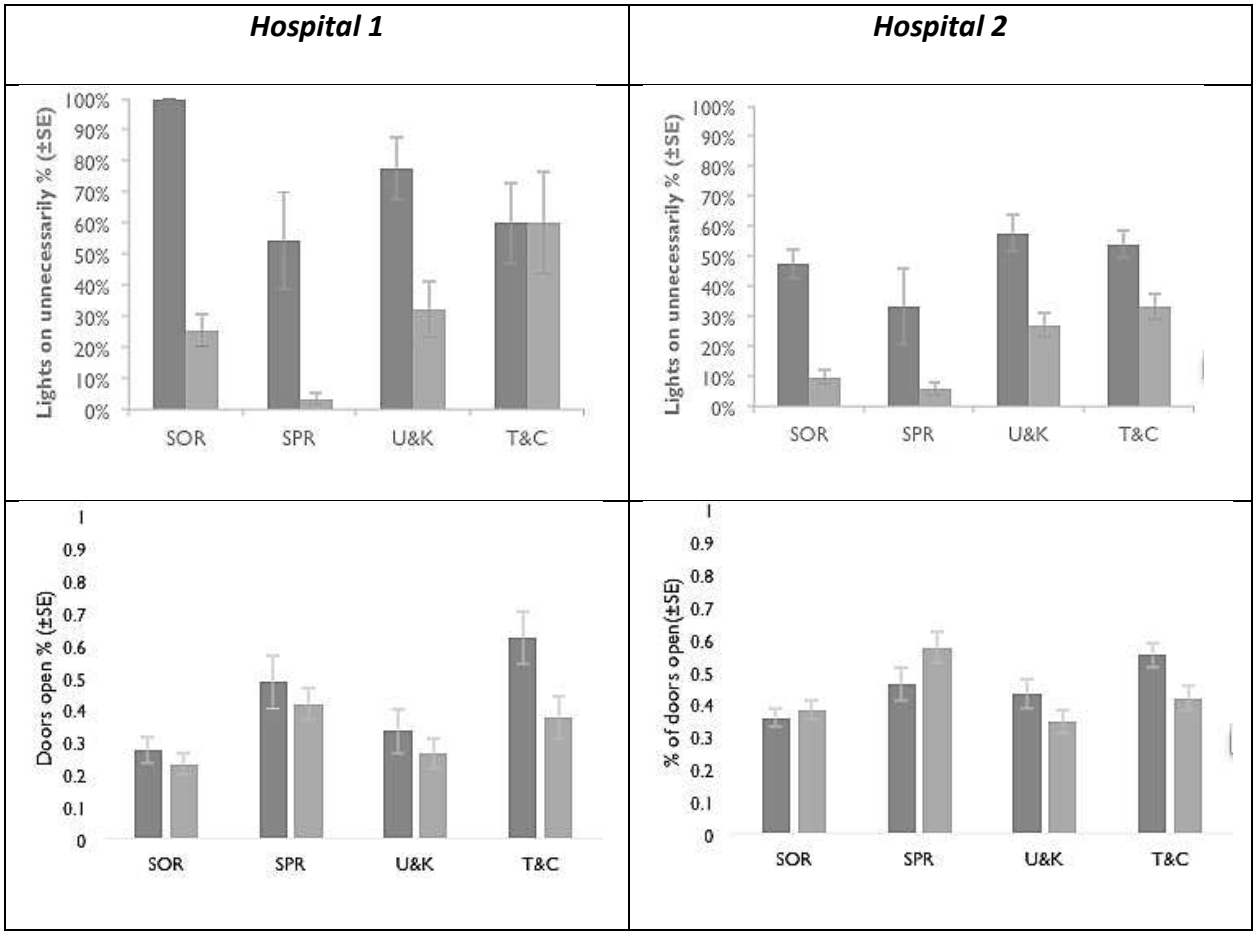
As discussed in the literature review and the methodology the benefits of an energy saving behaviour change social marketing intervention are examined for three healthcare stakeholder groups: the organisation/hospitals, the employees and the patients. This investigation allows us to examine the links between the environmental sustainability and social and political pillars of corporate social responsibility. Each section below reports and discusses the results based on the secondary dataset used in this paper and the TLC intervention examined. The results are organised in terms of the three stakeholders: the organisation/hospitals, hospital employees and patients, respectively.

4.1 Benefits of the Energy Saving Intervention for the Hospitals/Organisation based on Observations and Energy Data

Observation data of employees' actual environmental behaviour, as provided by the charity, are summarised in Figure 3. After calculating the total number of doors and lights left open and switched on unnecessarily in each ward after the intervention, this number was divided by the total number of doors and lights observed in hospital wards, respectively. This led to the calculation of doors and lights performance indicators, which were subsequently averaged to create a combined indicator of the energy saving actions adoption rate for each hospital ward. The combined indicator ranged from .16 (highest performance) to .50 (lowest performer), while the average was .33; illustrating variability in wards' energy saving adoption rates. This result infers that the success of the intervention in motivating employee energy saving actions varied by ward.

The secondary dataset also included a measure of actual environmental workplace behaviour (energy data), based on calculations by GAP staff pre- and post-intervention. Table 4 shows estimated energy savings of 764,820 KWh. According to the Energy Saving Trust (2014) this is equivalent to £103,403.66 and 367.11 tCO2 (based on an average rate of 13.52 pence/kWh of electricity and 0.48 kgCO2/kWh). These savings provide some evidence of the success of the intervention. However, caution should be shown when interpreting these results because they were based on "on the spot" observations (rather than using data collected by energy meters) and because of the limited ability of this type of measurement to control for other factors that influenced employees' behaviours. Nevertheless, this proxy measure of actual behaviour, along with the observational measures, strengthens the contribution of this research and supports the success of the TLC intervention in lowering energy consumption and associated costs for the two hospitals.

Figure 3: Lights Switched on and Doors Left Open Unnecessarily before and after the Energy Saving Intervention (used to create the energy saving actions adoption rate for each ward)



Dark Grey = Before the intervention; Light Grey = After the intervention; SOR = Hospital Employees/Employees Room Only; SPR = Single patient Room; U&K = Utility and Kitchen; T&C = Toilet and Communal

*Note: Figure based on observations and calculations conducted by GAP.

Table 4: Comparison of Energy Data Consumption in Aggregate Form*

Saving	Hospital 1	Hospital 2
	KWh Savings	KWh Savings
Lights (Daytime)	150,946	100,251
Night Switch Off	126,419	136,641
Computer Switch Off	76,381	53,874
Quiet time	15,937	21,249
Theatres	41,561	41,561
TOTAL	411, 244	353,576

*Note: These calculations were conducted by Global Action Plan

4.2 Hospital Employees' Perceptions of the Energy Saving Intervention

The main themes emerging from the post-intervention interviews with hospital employees are presented below.

4.2.1 RQ1: Awareness of the energy saving intervention

All interviewed employees were aware of the intervention, with some mentioning only the stickers while others referring to all aspects of the intervention. When asked about what they perceived an

energy saving intervention to be related to, most of them mentioned energy savings and financial/cost savings, in line with general NHS strategy (Tudor 2013). The interviewees referred to the intervention as having succeeded in raising awareness and educating employees about energy saving actions. This was seen as one of the main roles of the intervention, thus supporting earlier research on the importance of awareness in sustainable practices (Rothenberg 2003; Young et al. 2013). Two people mentioned the actions of switching/dimming lights and closing doors after lunch-time (which where communicated by employees to patients as "quiet time") as benefiting the patients and themselves.

"After lunch we have what we call rest period, an hour for patients…what we do is we use our fish key to set all the lights off until 2 o'clock" (F1, ward manager, 56 years)

"If there is quiet time, patients rest and we can catch up with the work…And with the lights off it's like... sort of relaxing" (F2, nurse, 38 years)

Turning lights off was the most mentioned aspect of the intervention, mainly in connection to stickers and posters, which raised awareness and encouraged behavioural actions. On a few occasions, the GAP's representatives were mentioned as a very visible element of the intervention but some interviewees mentioned their presence was not frequent enough.

4.2.2 RQ2: Personal involvement in the energy saving intervention

All the interviewed staff, except one new employee, reported their involvement in the intervention; described as complying with advice, "re-educating employees" (F3, ward manager); "trying to make people aware; policing" (F4, housekeeper, 60 years). A handful of employees with managerial duties reported a more pro-active engagement in the campaign via employee meetings; explaining to others why these specific actions must be taken; and leading by example and checking if actions were carried out by staff.

All employees stated their involvement as voluntary but this was coupled at times with organisational requests. Employees were satisfied with their contribution, with a few people acknowledging they want to do more in the future. A link between the individual actions and the organisation was mentioned ("I'm doing it cause I'm working for the Hospital and I'm helping out" – F5, discharge coordinator, 53 years) and a few people were satisfied with their behaviour because "[it] helps to save a lot of energy and money, especially during this crisis period" (F6, discharge coordinator, 29 years).

Another issue brought up was the connection between involvement with intervention actions at work and home behaviour. Several employees mentioned the energy actions they did most were also those that they engaged with at home i.e. switching off lights and equipment. In both environments, the individual's motivation was to save money, aligning to general CSR and HNS strategy (Tudor, 2013).

4.2.3 RQ3: Perceived benefits of the energy saving intervention for employees, patients and the organisation

Aside from the perceived benefits for the employer, the respondents reported a mixture of opinions regarding the benefits to employees. Some considered that the "quiet time" period (lights turned off/doors closed) gave them a chance to catch up on work and with colleagues, to plan for the rest of their shift, enhanced data protection by logging and switching off regularly; with some employees also benefiting from a better ability to concentrate and less discomfort/headaches from lighting. Other individuals did not see any personal benefits or could not answer this question.

Most of the employees considered the intervention benefited the patients via the "quiet time" periods, which provided beneficial rest and relaxation for patients and was "part of the healing" process (M1, ward manager, 52 years). However, others considered the campaign benefited mainly the organisation via financial savings and did not help the patients, while others assumed "in the long rung the money will go back to the patients, I'm hoping" (F4).

4.2.4 RQ4: Perceived challenges in implementing the energy saving intervention

The most prevalent challenges raised were ones relating to employees' habits and convenience in having lights, doors and equipment on all the time. Organisational culture (i.e. way of doings things in the healthcare organisation) was also mentioned as a barrier, and some people were seen to start changing their behaviour once they believed this was part of the hospital policy. This supports prior research examining sustainable waste practices, which highlighted the importance of organisational culture and focus of the organisation (Tudor et al. 2008). Communicating directly to the large number of employees about the intervention, and employee turnover were also mentioned as key barriers. Managers noted that the busy nature of the job makes it difficult for people to be aware and engage with all campaign actions. The lack of key enthusiastic people who could motivate others (i.e. green champions) was also noted. In some wards, the patients and their needs as well as claustrophobic

concerns, were mentioned as reasons for not closing doors consistently. Lastly, infrastructure issues such malfunctioning electrics, light switches shared by two rooms, lack of control over automatic lights and slow computers were stated as barriers.

4.2.5 RQ5: Assessment of the energy saving intervention's outcomes

When asked whether they thought the intervention was effective, the employees agreed it was successful in raising awareness, changing certain behaviours but not others (e.g. turning of lights was more successful than closing doors). For some employees, certain actions were more successfully adopted because this is something they do at home (e.g. turning lights off). Some employees mentioned the campaign was effective because the patients provided them with positive feedback and because of the GAP staff's enthusiasm. Finally, others could not comment largely because they had not received any feedback from managers or the patients.

4.3 Changes in Patients' Hospital Experience Indicators as a Result of TLC Actions Carried out by Hospital Employees after the Intervention

4.3.1 Examining H1

Significant differences between the pre and post-intervention data indicated that the adoption of TLC actions as a result of the intervention affected patients' perceived quality of sleep ($t(127)=-2.51$, $p<.05$). There was a 7.2% positive change in the quality of sleep due a reduction of noise from machines, from outside the room, from fellow patients, from employees at night, and from lights from the corridor ($M_{pre\text{-}intervention}=3.78$, $SD_{pre\text{-}intervention}=.11$; $M_{post\text{-}intervention}=4.14$, $SD_{post\text{-}intervention}=.09$). Thus, the adoption of energy saving actions among employees as a result of the TLC intervention indirectly improved quality of sleep for patients and thus H1a was supported. However, perceptions of thermal comfort, privacy, and satisfaction with hospital experience did not change as a result of employees' engagement in TLC actions after the intervention; therefore, H1b, H1c, and H1d were rejected. It should be noted that differences found between wards surveyed in the pre and post-intervention data ($\chi2(31)=59.13$, $p<.01$) might have contributed to these results. As explained in the methodology section, the composite scores of the latent factors were used for this analysis, which may also affect results.

Given that some energy saving actions could not be undertaken in bay rooms (i.e. closing doors), differences between the pre and post-intervention data were also compared separately for bay rooms. In bay rooms ($n_{pre\text{-}intervention}=54$, $n_{post\text{-}intervention}=68$) quality of sleep ($t(98)=-2.09$, $p<.05$) improved by 6.8% after the intervention ($M_{pre\text{-}intervention}=3.75$, $SD_{pre\text{-}intervention}=.96$; $M_{post\text{-}intervention}=4.09$, $SD_{post\text{-}intervention}=.69$) but not for single rooms. Thus, H1a was supported for bay/multi-bed rooms only.

Based on additional patient data contained within the secondary dataset as indicated in Table 3, in single rooms ($n_{pre\text{-}intervention}=8$, $n_{post\text{-}intervention}=9$) the number of patients who spoke to hospital employees regarding making changes to the room temperature was reduced after the intervention ($\chi2(1)=4.10$, $p<.05$, $n=17$), due to the TLC actions employees took. 3 out of 8 patients spoke to staff regarding making changes to the room temperature in the pre-intervention, while no patients did this in the post-intervention. This is a 37.5% improvement in room temperature in single rooms based on number of patients who spoke to hospital employees regarding making changes to the room temperature. Based on this finding TLC actions as a result of the intervention may also benefit room temperature perceptions in single rooms (related to H1c).

4.3.2 Examining H2 to H4

After checking the adequacy of the variable-to-sample ratio for using a SEM approach, a first SEM model tested H2 and H3 based on the combined samples of the pre and post-intervention data (participants in the pre and post-data were not the same). A second multigroup SEM model was computed with the energy saving intervention as the grouping variable (i.e. Group 1: before intervention, Group 2: after intervention), in order to examine whether or not the energy saving intervention moderated H2 and H3 (i.e. H4). In both models, age, gender, and nights in the hospital were included as controls, by loading each one as an independent variable on quality of sleep, privacy, thermal comfort, and satisfaction with hospital experience. Once again, the composite scores of the latent factors were used for this analysis.

The first SEM model, computed using the combined datasets of pre- and post-intervention data, revealed a statistically good model fit ($\chi2 =.31$, $df = 1$, $p = .57$; $RMSEA = .00$; $CFI = 1.00$; $SRMR = .01$, $N=141$). This showed that patients' perceptions of quality of sleep, privacy, thermal comfort, predict satisfaction with the hospital experience (whether this is pre or post-intervention). These

variables accounted for 22% of the variance in hospital experience satisfaction, and 20% in quality of sleep. Quality of sleep (H2a) and privacy (H2b) positively affect hospital experience satisfaction, but thermal comfort does not (H2c). Privacy positively relates to quality of sleep (H3a), but thermal comfort does not (H3b). Thus, only H2a, H2b, and H3a were supported. Table 5, shows the SEM results, including the impact of the controls (age, gender and nights in the hospital) on constructs, and a hypothesis summary (H2-H3).

Given that quality of sleep improved after the intervention as a result of employees engaging in TLC actions, and based on the positive relationship of quality of sleep with satisfaction, it can be concluded that TLC actions have the potential to improve patient hospital experience satisfaction through quality of sleep. Also, privacy was positively associated with satisfaction (H2b) and quality of sleep (H3a). Therefore, both quality of sleep and privacy are important determinants of satisfaction.

The second multigroup SEM model (for testing H10) also had a statistically good model fit ($\chi 2$ =.53, df = 2, p = .76; RMSEA = .00; CFI = 1.00; SRMR = .01, N=141). The $\chi 2$ value of .50 for the pre-intervention data (Group 1: Npre-intervention=61) was greater than the $\chi 2$ value of .03 post-intervention one (Group 2: Npost-intervention =80); thus, indicating that the hypothesised model fits the post-intervention data better than the pre-intervention data. However, a chi-square test between the first and second SEM model illustrated no significant differences ($\Delta\chi 2$=.31-.53= -.22, Δdf=1, p>.05). Thus, H4 was rejected; the intervention does not moderate H2 and H3 as expected (even though an alternative hypothesis was proposed due to the lack of empirical evidence on this i.e., H4).

Table 5: SEM Results of Relationships among Patient Hospital Experience Indicators Based on the Combined Sample of the Pre and Post-intervention Data

Hypothesised Relationships	Std. Loadings	S.E.	z-scores	Hypothesis Supported?
H2a: Quality of Sleep → Satisfaction with Hospital Experience	.25**	.11	2.37	Yes
H2b: Privacy → Satisfaction with Hospital Experience	.26**	.09	2.69	Yes
H2c: Thermal Comfort → Satisfaction with Hospital Experience	.04	.10	0.38	No
H3a: Privacy → Quality of Sleep	.41**	.09	4.62	Yes
H3b: Thermal Comfort → Quality of Sleep	.13	.09	1.51	No
Controls				
Age → Quality of Sleep	.05	.09	.52	n/a
Gender → Quality of Sleep	-.01	.09	-.07	n/a
Nights in the Hospital → Quality of Sleep	-.03	.09	-.28	n/a
Age → Privacy	.22*	.10	2.09	n/a
Gender → Privacy	.18*	.09	1.96	n/a
Nights in the Hospital → Privacy	-.13	.10	-1.28	n/a
Age → Thermal Comfort	.12	.09	1.23	n/a
Gender → Thermal Comfort	.09	.09	1.05	n/a
Nights in the Hospital → Thermal Comfort	-.03	.10	-.26	n/a
Age → Satisfaction with Hospital Experience	.11	.10	1.05	n/a
Gender → Satisfaction with Hospital Experience	-.04	.09	-.41	n/a
Nights in the Hospital → Satisfaction with Hospital Experience	-.03	.10	-.30	n/a

***p≤.05, *≤.01,* N=141

4.3.3 Differences in Patient Experience Indicators based on the Energy Saving Actions Adoption Rate

We examined differences in patient experience indicators in terms of the energy saving adoption rate of wards, as it could not be assumed that each hospital or ward adopted energy saving actions, at the same level. No significant differences were found between the two hospitals in terms of the adoption rate ($\chi^2_{(1)}$=2.08, p>.05). Hospital wards were then split based on the median (.32) into high (≤.32) and low (>.32) energy saving actions adopters. The sample sizes of the wards were largely balanced i.e. high (n=47) and low (n=39). The post-intervention patient data (N=86, which excluded two participants who did not provide the name of hospital ward) was then used to examine differences between high and low adopters. This is a significant contribution to the literature as it both examines the effects of an energy saving intervention within a healthcare context and links actual workplace behaviour measures (observations) with patient data (questionnaires).

The only differences found were that: a) wards adopting more energy saving behaviours had more female patients than male patients and vice versa ($\chi^2_{(1)}$ =14.7, p<.01); while b) patients in wards adopting more energy saving behaviours stayed in the hospital for fewer nights than wards adopting fewer energy saving behaviours ($\chi^2_{(2)}$ =9.83, p<.01). The breakdown of high vs. low adoption rate (using the median split) may have contributed to the lack of additional differences.

To examine this further, a series of ANOVAs were conducted to test patient experience indicators and, whether or not, they vary based on a continuous measure of adoption rate ranging from .16 to .50 (instead of dividing into low and high adopters). Results indicated that quality of sleep and thermal comfort perceptions vary based on the continuous measure of adoption rate, but no specific pattern was observed. In average energy saving adopting wards (those with a rate of .32), patients reported better quality of sleep [F(16,49)=3.07, p<.01] and thermal comfort perceptions [F(16,57)=2.05, p<.05] than those patients in lower or higher energy saving adopting wards. Another explanation for this, as mentioned in employees' interviews, is that some patients are claustrophobic and do not like doors being closed. Complying very little (low adopters) or a lot (high adopters) with this action, could have affected the patients' reported quality of sleep and thermal comfort perceptions, at least for the single rooms. Additionally, some staff mentioned they had no control over the sensor-based lights, that "there is no way of individually turning of lights in certain areas, the whole ward is on one switch" (F7, nurse, 49 years), that some "headboard lights don't work...for some beds which means we have to use the big... main room light" (M2, discharge nurse, 40 years) and that some patients do not want to turn off the television.

In any mixed methods approach it is important to conjoin results across all data collection methods and data sources. While each collection method and source provides answers to particular research questions or hypotheses, to develop key recommendations it is important to corroborate and connect the main results across all aspects. It is clear that financial savings were important and were both actual, and perceived by the employees. Employees also saw the benefit financial savings could have on services, which they provided as it was an effective way to save money which could be redistributed were it was needed (although this could be further highlighted-see below). Awareness about sustainability and sustainable actions was raised across the organisation and this ultimately led to behaviour change. Additionally, it was clear that the intervention helped develop an organisational culture with active engagement from managers, reported commitment to the organisation by employees and an integration of energy savings actions resulting in new initiatives (e.g. "quiet time"). Improved quality of sleep was also a key finding, as result of the new "quiet time" initiative, although it was clear that this, along with savings made (in energy and money) was not evenly spread across different wards. These findings are aligned with the view that the approach "one size does not fit all" in not suited across organisations with regards CSR, and it further suggests that a ward by ward approach needs to be taken in order to get the best possible results in any energy saving intervention.

5 RECOMMENDATIONS FOR FUTURE INTERVENTIONS

Based on the results above there are a number of practical recommendations that can be made, which will increase effectiveness of future interventions and also raise the issue of sustainability more widely across the organisation. Some of these recommendations came from the employees themselves during the data collection and roll out of the intervention, while some are based on the results and the identified barriers to behaviour change.

Organisational culture was a key element, which was needed to support the success of the intervention. Therefore, senior staff should be seen not only to be engaged with the intervention recommended actions, but also supportive more broadly of sustainability initiatives through standard communication routes already utilised such as newsletters, e-mails, posters and via induction sessions. Additionally, as employees often feel they need permission to make changes or do not have relevant levels of responsibility, senior managers should empower all staff to make changes and to discuss these within their own wards.

Based on the findings, we also consider that organisational factors and incentives could be used to enhance employees' engagement with energy saving behaviours. Future interventions should consider a full infrastructure and equipment assessment (e.g. computers, lights, air-conditioning) before the intervention, which is consistent with Verheyen's et al. (2011) suggestion encouraging each hospital room to have its own temperature control as thermal comfort might vary from patient to patient. Given the employees mentioned differences between the patients' needs and infrastructure of the wards, it is critical that focus groups with employees are organised prior to the campaign to identify specific and relevant actions to be carried out in each ward. The intervention actions recommended could be considered for integration in the employees' induction, due to large employee numbers and turnover.

Although the campaign was designed to benefit the hospital by both saving energy and improving patients' experience, future campaigns must better emphasise the expected outcomes and their threefold focus – the organisation, employees and patients. The focus on patients would be particularly beneficial because patient care is an intrinsic and extrinsic motivator for employees (Peltier et al. 2009). Campaigns should build upon and include messages of the organisation's caring concerns and values. This could increase employees' behavioural change within the organisation (Turker 2009; Kim et al. 2010). Additionally, the social marketing literature highlights that the benefits for each target audience may be different and need to be carefully understood prior to campaign development (Lee & Kotler 2011). It may be that a range of different communications are utilised, highlighting different benefits to different audiences and should be supported by communications directly to the patients themselves.

One particular practical aspect that the organisations could utilise to further enhance the success of these interventions is the use of energy feedback. Feedback generally is supported by the prior literature (Carrico & Riemer 2011) and could focus on reporting indicators of energy, financial savings and patient wellbeing changes. Additionally, as some employees did not see any personal benefits arising from the campaign, interventions should illustrate how the money saved may be used to improve employees' working conditions e.g. acquisition of new equipment, energy saving bulbs etc. How the feedback is presented to the employees is also of importance. Studies highlighting social norming elements of energy feedback mention a number of ways in which energy feedback can be presented to a target audience, which might include showing energy consumption in terms of comparison to a reference group or the top performers in a reference group (Harries et al. 2013). Harries et al. (2013) also note the importance of avoiding any potential boomerang effects by including an injunctive norm aspect (an approval/disapproval of performance element). Additionally, they note that any feedback must be accompanied by ways to improve performance and ideally these will be personalised to the particular individual or group. McAlaney et al. (2010) highlight that providing feedback in comparison to a reference group must be carefully considered, in particular ensuring the reference group is seen as appropriate for the target audience (the group with which the target group identifies or associates with; people like themselves). The differences between wards suggests that comparisons could be made between wards and feedback might be on a ward by ward basis but any future work should examine which wards more readily associate with each other and see each other as doing similar work, with similar equipment and similar patients. Alternatively, comparisons could be made with similar hospitals, but similarly pre-testing would be important to determine the effectiveness of this approach.

Recommendations specifically related to improving the intervention, as mentioned but the hospital employees, included the use of small team and workshop campaign awareness raising (which links it turn to the organisational culture already noted). This could also take the form of a more community based social marketing approach where communities are encouraged to select the behaviour change to be promoted and because of this connection to it is thought to further spur them to action (CBSM 2016). Alternatively, a different idea generation process, such as for example ideation (the process of generating or conceiving of new high quality ideas, see Gressgård 2012), could be examined to generate ideas about sustainability within wards, hospitals and beyond. Employees also suggested that they would have welcomed more visual materials, posters and videos would enhance future campaigns and a larger and more frequent presence of the charity's staff during all stages of the campaign, as well as more training for hospital employees regarding the environmental actions. Such an approach could also be supplemented by environmental champions from within the organisation itself, who could direct and support environmental actions (Taylor et al. 2012) aligning them with a cultural focus on sustainability. The final recommendation from employees also suggested that "quiet time" should be "a bit longer …stretched out by half an hour or so...cause sometimes they are still eating" (F8, healthcare support officer).

As per prior literature (Tudor et al. 2007; 2008), lack of motivation, old habits and lack of consistency were mentioned as challenges, all of which could be related to organisational culture (as noted above). This points to the need for a longer, repeated and larger scale energy saving intervention across the organisation in order to change attitudes and behaviours (Lee & Kotler 2011), which is fully supported by senior management and championed at all levels.

6 CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

This paper has examined the impact of an environmental sustainability intervention in the healthcare industry. Using secondary longitudinal data, from three key stakeholder groups (the organisation, hospital employees, and patients), the findings provide a holistic assessment of environmental CSR in healthcare beyond a strategy of cost saving. Results suggest the intervention was perceived to benefit the organisation, hospital employees, and patients (i.e., indirectly through TLC

energy saving actions). Results also highlight organisational culture as a key variable and underline the need for a pre-intervention assessment of infrastructure and equipment, the communication of expected benefits to motivate higher employee involvement, the need for internal green champions and the use of feedback to employees.

Differences in treatments, patients, and medical equipment of hospital wards and the relatively small sample size of patient surveys might have led to some non-significant results between the pre and post-intervention patient data. Future research should use larger, more balanced and representative matched samples before and after the intervention; collect cross-seasonal data from the same wards both pre- and post-intervention; and use reliable and validated multi-item scales (e.g. quality of sleep – Ellis et al. 1981; thermal sensation and acceptability – Hwang et al. 2007). Furthermore, bay and single rooms might require different interventions and other energy saving actions could be explored in future research e.g. as closing hospital cubical curtains for space heating and privacy, using bedding insulation, encouraging patients to reduce water heating for personal usage, using natural ventilation for cooling, and grouping patients with similar health status in multi-bed rooms.

Employees' environmental attitudes, knowledge, perceptions of the organisation's environmental behaviour and home behaviour should be investigated in detail, as these might explain employees' energy saving actions adoption (Manika et al. 2013). Running concurrent interventions for waste management (see Tudor et al. 2007; 2008) and energy saving may save time and effort for the organisation and, thus, potentially, make CSR initiatives and interventions more cost effective (Gregory-Smith et al. 2015). Additionally, studying behaviours concurrently could identify any common motivations, antecedents, and spillovers between different environmental behaviours.

REFERENCES

Aguinis, H., Glavas, A. 2012. 'What we know and don't know about corporate social responsibility: A review and research agenda.' Journal of Management, 38, 932-968

Akremi, A.E., Gond, J-P., Swaen, V., De Roeck, K., Igalens, J. 2015. 'How Do Employees Perceive Corporate Responsibility? Development and Validation of a Multidimensional Corporate Stakeholder Responsibility Scale.' Journal of Management. doi: 10.1177/0149206315569311

Andersson, L., Shivarajan, S., Blau, G. 2005. 'Enacting ecological sustainability in the MNC: A test of an adapted value-belief-norm framework.' Journal of Business Ethics, 59(3), 295-305.

Arena, M., Chiaroni, D. 2014. 'Roadmapping for Sustainability: Evidence from an Italian-based Multinational Firm.' International Journal of Business Science and Applied Management, 9(2).

Banks, N., Redgrove, Z., Gunn, M., Mullen, J., Ryle, J., Fawcett, T., Ristic, L., Bird, S. 2012. 'What are the factors influencing energy behaviours and decision-making in the non-domestic sector?' London: Centre for Sustainable Energy (CSE), Environmental Change Institute (ECI).

Barker, K., Fong, L., Grossman, S., Quin, C., Reid, R. 1994. 'Comparison of self-reported recycling attitudes and behaviors with actual behavior.' Psychological Reports, 75(1), 571-577. doi: 10.2466/pr0.1994.75.1.571

Bihari, S., McEvoy, R.D., Matheson, E., Kim, S., Woodman, R. J., Bersten, A.D. 2012. 'Factors affecting sleep quality of patients in intensive care unit.' Journal of Clinical Sleep Medicine, 8(3), 301-7.

Butler, D., Oswald, S., Turner, D. 1996. 'The effects of demographics on determinants of perceived healthcare service quality.' Journal of Management in Medicine, 10(5), 8-20.

Carrico, A.R., Riemer, M. 2011. 'Motivating energy conservation at the workplace: An evaluation of the use of group-level feedback and peer education.' Journal of Environmental Psychology, 31(1), 1-13.

CBSM. 2016. Fostering Sustainable Behaviour. Accessed via www.cbsm.com on 21 December 2016.

Chao, Y.L., Lam, S.P. 2011. 'Measuring responsible environmental behavior: Self-reported and other-reported measures and their differences in testing a behavioral model.' Environment and Behavior, 43(1), 53-71.

Chou, C-J. 2014. 'Hotels' environmental policies and employee personal environmental beliefs: Interactions and outcomes.' Tourism Management, 40, 436-446.

CMS. 2014. Accessed on 26/09/2014:https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/CAHPS/

Coles, T., Fenclova, E., & Dinan, C. 2011. 'Responsibilities, recession and the tourism sector: perspectives on CSR among low-fares airlines during the economic downturn in the UK.' Current Issues in Tourism, 14(6), 519-536.

Cramer, J., van der Heijden, A., Jonker, J. 2006. 'Corporate social responsibility: making sense through thinking and acting.' Business Ethics: A European Review, 15 (4), 380-389.

Desjardins, J. 2010. 'Will the future be sustainable?' Business Ethics Quarterly, 20(4), 723-725.

Djongyang, N., Tchinda T., Njomo D. 2010. 'Thermal comfort: A review paper.'

Renewable and Sustainable Energy Reviews, 14, 2626-2640.

Draper, H. 1996. 'FOCUS: Can Britain's NHS managers be business-like and should they adopt the values of business?' Business Ethics: A European Review, 5 (4).

Ebreo, A., Vinning, J. 1994. 'Conservation-wise consumers: Recycling and household shopping as ecological behavior.' Journal of Environmental Systems, 23, 109-131.

Ellis, B.W., Johns, M.W., Lancaster R., Raptopoulos P., Angelopoulos N., Priest R.G. 1981. 'The St. Mary's Hospital sleep questionnaire: A study of reliability.' Sleep, 4(1), 93-97.

Enderle, G. 2010. 'Clarifying the terms of business ethics and CSR.' Business Ethics Quarterly, 20(4), 730-732.

Energy Saving Trust. 2014. 'Our calculations.' Accessed on 26/09/2014: http://www.energysavingtrust.org.uk/Energy-Saving-Trust/Our-calculations

Fortin, M., Hudon, C., Gallagher, F., Ntetu, A. L., Maltais, D., Soubhi, H. 2010. 'Nurses joining family doctors in primary care practices: perceptions of patients with multimorbidity.' BMC Family Practice, 11(1), 84.

Foss, C., Ellefsen, B. 2002. 'The value of combining qualitative and quantitative approaches in nursing research by means of method triangulation.' Journal of Advanced Nursing, 40(2), 242-248.

Gallagher J.A., Goodstein. J. 2002. 'Fullfilling institutional responsibilities in health care: Organisational ethics and the role of mission discernment.' Business Ethics Quarterly, 12(4), 433-450.

Gerstlberger,W., Præst Knudsen, M., Stampe, I. (2014). 'Sustainable Development Strategies for Product Innovation and Energy Efficiency.' Business Strategy and the Environment, 23, 131–144.

Glavas, A., Godwin, L. 2013. 'Is the perception of "goodness" good enough? Exploring the relationship between perceived corporate social responsibility and employee organizational identification.' Journal of Business Ethics, 114, 15-27.

Gregory-Smith, D, Wells, V.K, Manika, D., Graham, S. 2015. 'An environmental social marketing intervention among employees: Assessing attitude and behaviour change.' Journal of Marketing Management, 31(3-4), 336-377. doi: 10.1080/0267257X.2014.971045

Gressgård, L.J. 2012. 'Computer-mediated group communication and ideation performance.' International Journal of Business Science and Applied Management, 7(2).

Grose, J., Richardson, J. 2013. Managing a sustainable, low carbon supply chain in the English National Health Service: The views of senior managers. Journal of health services research & policy, 18(2), 83-89.

Haiyan, Q.E.A., Platonova, K., Kennedy, N., Shewchuk, R.M. 2011. 'Primary care patient satisfaction segmentation.' International Journal of Health Care Quality Assurance, 24(7), 564-576.

Hamilton, K. 2008. 'The challenge of sustainable hospital building.' Frontiers Of Health Services Management, 25(1), 33.

Harries, T., Rettie, R., Studley, M., Burchell, K., and Chambers, S. 2013. 'Is social norms marketing effective?' European Journal of Marketing, 47(9), 1458 – 1475, doi: 10.1108/EJM-10-2011-0568

Healthcare financial management association (hfma). 2013. 'Keys to energy sustainability in hospitals.' Accessed on 26/09/2014: www.hfma.org/WorkArea/DownloadAsset.aspx?id=20694

Hoffman AJ. 1993. 'The importance of fit between individual values and organisational culture in the greening of industry.' Business Strategy and the Environment 2(4): 10–18. 10.1002/bse.3280020402

Huffman, A.H., Van Der Werff, B.R., Henning, J.B., Watrous-Rodriguez, K. 2014. 'When do recycling attitudes predict recycling? An investigation of self-reported versus observed behavior.' Journal of Environmental Psychology, 38, 262-270.

Hwang R.L., Lin T.P., Cheng, M.J., Chien J.H. 2007. 'Patient thermal comfort requirement for hospital environments in Taiwan.' Building and Environment, 42, 2980-2987.

Jeffries, I., Rowlands-Rees, T. 2013. Energy efficiency trends annual report 2012/2013. Essential insight for consumers and suppliers of non-domestic energy-efficiency., EEVS Bloomberg New Energy Finance. http://about.bnef.com/ white-papers/energy-efficiency-trends-annual-report-201213/ Accessed 10 Nov 2014.

Jenkinson, C., Coulter A., Bruster, S. 2002. 'The Picker Patient Experience Questionnaire: development and validation using data from in-patient surveys in five countries.' International Journal of Quality in Health Care, 14(5), 353-358.

Kennedy, A. L. 2010. Using community-based social marketing techniques to enhance environmental regulation. Sustainability, 2, 1138–1160.

Khodakarami, J., Nasrollahi, N. 2012. 'Thermal comfort in hospitals – A literature review.' Renewable and Sustainable Energy Reviews, 16, 4071-4077.

Kim, H-R., Lee, M., Lee, H-T., Kim, N-M. 2010. 'Corporate social responsibility and employee-company identification.' Journal of Business Ethics, 95(4), 557-569.

Linder-Pelz, S. 1982. 'Toward a theory of patient satisfaction.' Social Science and Medicine, 16(5), 577-82.

Lindgreen, A and Swaen, V. 2010. 'Corporate Social Responsibility.' International Journal of Management Reviews, 12(1), 1-7

Lee, N.R, Kotler, P. 2011. 'Social Marketing: Influencing Behaviors for Good' (4th Edition), Sage Publications.

Lei, Z., YuanQ., Wu Q., Kwauk, S., Liao, X., Wang, C. 2009. 'Sleep quality and sleep disturbing factors of inpatients in a Chinese general hospital.' Journal of Clinical Nursing, 18, 2521–2529.

Leino-Kilpi, H., Valimaki, M., Dassen, T., Gasullc, M., Lemonidou, C., Scott, A., Arndt, M. 2001. 'Privacy: a review of the literature.' International Journal of Nursing Studies 38, 663–671

Leung, R., Medelby Pedersen, M., Nørregaard Clemmensen, S. 2015. 'The Role of Corporate Sustainability in a Low-Cost Business Model – A Case Study in the Scandinavian Fashion Industry.' Business Strategy and the Environment, 24, 344-359.

Levitt, S.D., List, J.A. 2007. 'What do laboratory experiments measuring social preferences reveal about the real world?' The Journal of Economic Perspectives, 21(2), 153-174.

Lo, S.H., Peters, G.J.Y. Kok, G. 2012a. 'A review of determinants of and interventions for proenvironmental behaviors in organizations.' Journal of Applied Social Psychology, 42(12), 2933-2967.

Lo, S.H., Peters, G.J.Y., Kok, G. 2012b. 'Energy-related behaviors in office buildings: A qualitative study on individual and organisational determinants.' Applied Psychology: An International Review, 62(2), 227-249.

Ludwig, T.D., Gray, T.W., Rowell, A. 1998. 'Increasing recycling in academic buildings: A systematic review.' Journal of Applied Behavior Analysis, 31(4), 683-686.

Manika, D., Wells, V.K., Gregory-Smith, D., Gentry, M. 2015. 'The impact of individual attitudinal and organisational variables on workplace environmentally friendly behaviours.' Journal of Business Ethics, 126(4), 663- 684. doi: 10.1007/s10551-013-1978-6

Marans, R.W., Lee, Y.J. 1993. 'Linking recycling behaviour to waste management planning: A case study of office workers in Taiwan.' Landscape and Urban Planning, 26(1), 203-214.

McAlaney, J., Bewick, B.M., Bauerle, J. 2010. 'Social Norms Guidebook: A guide to implementing the social norms approach in the UK.' University of Bradford, University of Leeds, Department of Health: West Yorkshire, UK. https://europeansocialnormsinstitute.files.wordpress.com/2014/05/social-norms-uk-guidebook-june-2010.pdf

McCurdy, D.B. 2002. 'But is it business?' Business Ethics Quarterly, 12(3), 527-538.

McDonald, S. 2011. 'Green behaviour: Differences in recycling behaviour between the home and workplace.' In D. Bartlett, (Ed.), Going Green: The psychology of sustainability at the workplace. Leicester, UK: The British Psychological Society: 1-5.

McKenzie-Mohr, D. 1994. Social marketing for sustainability: The case of residential energy conservation. Futures, 26, 224–233.

McKenzie-Mohr, D., Schultz, W. P., Lee, N. R., Kotler, P. 2012. Social marketing to protect the environment: What works. Thousand Oaks, CA: Sage.

Morgenstern, P., Raslan, R., Huebner, G. 2016. Applicability, potential and limitations of staff-centred energy conservation initiatives in English hospitals. Energy Efficiency, 9, 27–48.

Mwachofi, A., Walston, S.L., Al Omar, B.A. 2011. 'Factors affecting nurses' perceptions of patient safety.' International Journal of Health Care Quality Assurance, 24(4), 274-283.

Naidu, A. 2009. 'Factors affecting patient satisfaction and healthcare quality.' International Journal of Health Care Quality Assurance, 22(4), 366-381.

Neven, L., Walker, G., Brown, S. 2014. Sustainable thermal technologies and care homes: Productive alignment or risky investment?. Energy Policy.

OECD. 2006. 'Women and Men in OECD Countries.' OECD Publications, Paris, No.838412006.

Parrott, R., Burgoon, J., Burgoon, M., LePoire, B. 1989. 'Privacy between physicians and patients: More than a matter of confidentiality.' Social Science and Medicine 29(12), 1381-1385.

Peltier J., Dahl A., Mulhern, F. 2009. 'The relationship between employee satisfaction and hospital patient experiences.' Accessed on 26/09/2014: http://www.marketing.org/files/Hospital%20Study%20-Relationship%20Btwn%20Emp_%20Satisfaction%20and%20Pt_%20Experiences.pdf

Pérez-Lombard L., Ortiz J., Pout C. 2008. 'A review on buildings energy consumption information.' Energy and Buildings, 40(3), 394-398.

Pimentel-Souza, F., Carvalho, J.C., Siqueira, A.L. 1996. 'Noise and the quality of sleep in two hospitals in the city of Belo Horizonte, Brazil.' Brazilian Journal of Medical and Biological Research, 29(4), 515-520.

Podsakoff, P.M., MacKenzie, S.B., Podsakoff, N.P. 2003. 'Common method biases in behavioral research: A critical review of the literature and recommended remedies.' Journal of Applied Psychology, 88(5), 879-903.

Pouloudi, A. 1997. 'FOCUS: Conflicting Concerns over the Privacy of Electronic Medical Records in the NHSnet.' Business Ethics: A European Review, 6 (2), 94-101.

Powell, H., Mihalas, S., Onwuegbuzie, A.J., Suldo, S., Daley, C.E. 2008. 'Mixed methods research in school psychology: A mixed methods investigation of trends in the literature.' Psychology in the Schools, 45, 291-309.

Promislo, M.D., Giacalone, R.A., and Welch, J. 2012. 'Consequenses of concern: ethics, social responsibility, and well-being.' Business Ethics: A European Review, 21 (2), 209-219.

Ramanathan, R. Poomkaew, B., and Nath, P. 2014. 'The impact of organizational pressures on environmental performance of firms.' Business Ethics: A European Review, 23 (2), 169-181.

Rindfleisch, A., Malter, A.J., Ganesan, S., Moorman, C. 2008. 'Cross-sectional versus longitudinal survey research: concepts, findings, and guidelines.' Journal of Marketing Research, 45(3), 261-279.

Rothenberg, S. 2003. 'Knowledge content and worker participation in environmental management at NUMMI.' Journal of Management Studies, 40(7), 1783-1802

Rupp, D. E., Shao, R., Thornton, M. A., Skarlicki, D. P. 2013. 'Applicants' and employees' reactions to corporate social responsibility: The moderating effects of first-party justice perceptions and moral identity.' Personnel Psychology, 66, 895-933.

Saidur, M.R., Hasanuzzaman, S., Mohammedc, H.A., Hossain, M.S. 2010. 'An end-use energy analysis in a Malaysian public hospital.' Energy, 35, 4780-4785.

Scherbaum, C., Popovich, P.M., Finlinson, S. 2008. 'Exploring individual-level factors related to employee energy-conservation behaviors at work.' Journal of Applied Social Psychology, 36(3), 818-835.

Sharma, P., Sharma, S. 2011. 'Drivers of Proactive Environmental Strategy in Family Firms.' Business Ethics Quarterly, 21(2), 309-334.

Shippee, G., Gregory, W.L. 1982. 'Public commitment and energy conservation.' American Journal of Community Psychology, 10(1), 81-93.

Siebenaller, B. 2012. 'Connecting Sustainability to the healthcare mission.' Healthcare design, 5.

Silvestro, R. 2005. 'Applying gap analysis in the health service to inform the service improvement agenda.' International Journal of Quality & Reliability Management, 22(3), 215-33.

Smith, A.M., O'Sullivan, T. 2012. 'Environmentally responsible behaviour at the workplace: An internal social marketing approach.' Journal of Marketing Management, 28(3-4), 469-493.

Steg, L., Vlek, C. 2009. 'Encouraging pro-environmental behaviour: An integrative review and research agenda.' Journal of Environmental Psychology, 29(3), 309-317.

Taylor, A., Cocklin, C., and Brown, R. 2012. 'Fostering environmental champions: A process to build their capacity to drive change.' Journal of Environmental Management, 98, 84-97.

Thomas, D.R. 2006. 'A general inductive approach for analyzing qualitative evaluation data.' American Journal of Evaluation, 27(2), 237-246.

Tse, M., Chan, K.L., Wong, A., Tam, E., Fan, E., Yip, G. 2014. 'Health supplement consumption behavior in the older adult population: an exploratory study.' Frontiers In Public Health, 2.

Tudor, T. 2013 'The UK National Health Service (NHS) and the sustainability agenda.' Waste and Resource Management, 166(WR1)), 38-42. doi: 10.1680/warm.12.00016

Tudor, T., Baddley, J., Mayhew-Manchón, L. 2015. Examining the uptake of low-carbon approaches within the healthcare sector: case studies from the National Health Service in England. International Journal of Healthcare, 1(1), p.61-68.

Tudor, T.L., Barr, A.W., Gilg, A.W. 2007. 'Linking intended behaviour and actions: A case study of healthcare waste management in the Cornwall NHS.' Resources Conservation & Recycling, 51, 1-23.

Tudor, T.L., Barr, S.W., Gilg, A.W. 2008. 'A novel conceptual framework for examining environmental behaviour in large organisations: A case study of the Cornwall national health service (NHS) in the United Kingdom.' Environment & Behavior, 40(3), 426-450.

Turker, D. 2009. 'How corporate social responsibility influences organizational commitment.' Journal of Business Ethics, 89, 189-204.

Vallance, E. 1996. 'FOCUS: Ethics in Business and Health.' Business Ethics: A European Review, 5 (4).

Verheyen, J., Theys, J., Allonsius, L., Descamps, F. 2011. 'Thermal comfort of patients: Objective and subjective measurements in patient rooms of a Belgian healthcare facility.' Building and Environment, 46, 1195-1204.

Vining, J., Ebreo, A. 2002. 'Emerging theoretical and methodological perspectives on conservation behaviour.' Urbana, 51: 61801.

Walker, K., Ni, N., Dyck, B. 2015. 'Recipes for Successful Sustainability: Empirical Organizational Configurations for Strong Corporate Environmental Performance.' Business Strategy and the Environment, 24, 40–57.

Wells, R., Lee, S. Y. D., McClure, J., Baronner, L., Davis, L. 2004. 'Strategy development in small hospitals: stakeholder management in constrained circumstances.' Health Care Management Review, 29(3), 218-228.

Wells, V.K., Taheri, B., Gregory-Smith, D., and Manika, D. 2016. 'The Role of Generativity in Employee Environmental Attitudes and Behaviours.' Tourism Management, 56, 63-74

Wicks, A.C. 2002. 'Introduction: Special Issue on Health Care and Business Ethics.' Business Ethics Quarterly, 12(4), 409-412.

Yau, Y.H., Chandrasegaran, D., Badarudin, A. 2011. 'The ventilation of multiple-bed hospital wards in the tropics: A review.' Building and Environment, 46, 1125-1132.

Young, W., Davis, M., McNeill, I.M., Malhotra, B., Russell, S., Unsworth, K., Clegg, C.W. 2013. 'Changing Behaviour: Successful Environmental Programmes in the Workplace.' Business Strategy and the Environment, DOI: 10.1002/bse.1836.