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Nurses' perceptions of climate and environmental issues: a qualitative study

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Studies, Dalarna University, Falun, SwedenANÅKER A., NILSSON M., HOLMNER Å. & ELF M. (2015) Nurses' perceptions of climate and environmental issues: a qualitative study. *Journal of Advanced Nursing* 00(0), 000–000. doi: 10.1111/jan.12655**Abstract****Aim.** The aim of this study was to explore nurses' perceptions of climate and environmental issues and examine how nurses perceive their role in contributing to the process of sustainable development.**Background.** Climate change and its implications for human health represent an increasingly important issue for the healthcare sector. According to the International Council of Nurses Code of Ethics, nurses have a responsibility to be involved and support climate change mitigation and adaptation to protect human health.**Design.** This is a descriptive, explorative qualitative study.**Methods.** Nurses ($n = 18$) were recruited from hospitals, primary care and emergency medical services; eight participated in semi-structured, in-depth individual interviews and 10 participated in two focus groups. Data were collected from April–October 2013 in Sweden; interviews were transcribed verbatim and analysed using content analysis.**Results.** Two main themes were identified from the interviews: (i) an incongruence between climate and environmental issues and nurses' daily work; and (ii) public health work is regarded as a health co-benefit of climate change mitigation. While being green is not the primary task in a lifesaving, hectic and economically challenging context, nurses' perceived their profession as entailing responsibility, opportunities and a sense of individual commitment to influence the environment in a positive direction.**Conclusions.** This study argues there is a need for increased awareness of issues and methods that are crucial for the healthcare sector to respond to climate change. Efforts to develop interventions should explore how nurses should be able to contribute to the healthcare sector's preparedness for and contributions to sustainable development.**Keywords:** climate change, healthcare sector, nurse, nursing, perception, sustainable development

Why is this research needed?

- The International Council of Nursing argues that nurses need to support actions directed at reducing the effect of climate change on health. Consequently, nurses must be aware of the health implications of climate change and possess the skills necessary to address potential health risks.
- There is a lack of knowledge regarding nurses' perceptions of climate and environmental issues and such issues' effects on the healthcare sector.

What are the key findings?

- There is incongruence between climate and environmental issues and nurses' daily work.
- Nurses, as members of their profession, experienced a sense of individual responsibility to influence the environment in a positive direction.
- Public health work is regarded as a health co-benefit of climate change mitigation.

How should the findings be used to influence policy/practice/research/education?

- Nurses require greater knowledge to be able to be involved and support actions towards climate change mitigation and to adapt to protect human health.
- Efforts to develop interventions should explore how nurses can contribute to the healthcare sector's knowledge of, preparedness for and contributions to sustainable development.

Introduction

There is scientific consensus that the climate is changing and that it is affected by human activity (Intergovernmental Panel on Climate Change 2013). Climate change will influence human health; therefore, healthcare systems need to address climate change and its potential implications (Costello *et al.* 2009, Woodward *et al.* 2014). It is of international relevance to understand how nurses perceive their role in a sustainable healthcare sector; developing a sustainable healthcare sector is a global challenge. In this paper, we address a previously unexamined area of research on how nurses perceive climate and environmental issues and their role in contributing to the process of sustainable development.

Background

Climate change is described as the most important global health threat of the coming century. It will affect human health in various ways, including the availability of food

and fresh water, rising sea levels affecting settlement patterns, extreme weather events, migration, emerging diseases and altered transmission patterns of vector-borne diseases (Lindgren & Gustafsson 2001, Costello *et al.* 2009, McMichael & Lindgren 2011, Tokarevich *et al.* 2011). Among vulnerable populations, such as children, older adults, individuals with pre-existing illnesses and the poor, these changes will be particularly challenging because these individuals have fewer resiliencies than individuals who have additional resources and are well connected to their community (Frumkin *et al.* 2008).

Barna *et al.* (2012) formulated key skills and perspectives essential to achieving the goals of sustainable development in the healthcare sector: knowledge of the facts, transport and communication, diet, resources and materials and the development of care models based on the notion of human impact and dependence on the environment. They suggest that human health is rooted in the stability and resilience of the environment, thereby creating practical implications for nursing. Healthcare education should provide a knowledge base to prepare nurses for their role as representatives of a sustainable healthcare sector. Nurses are the largest group of healthcare staff and consequently play a critical role in the healthcare sector's sustainable development.

The definition of sustainability in the context of nursing is an important and recently explored topic (Anåker & Elf 2014); nursing contributes to sustainable development, a concept that can be defined based on ecology (global and holistic). Employing the concept of sustainability entails environmental considerations at all levels. The implementation of sustainable practice will contribute to and drive developments towards maintaining an environment that does not harm current and future generations' opportunities for good health. McMillan (2014) contends that the concept of sustainability is fragile and highly dependent on the processes and stakeholders who create its content. Thus, there are diverse interpretations of the concept. Understanding the concept's complexity will improve nurses' ability to play a major role in, for example, sustainable health initiatives such as environmentally friendly hospital buildings.

The International Council of Nursing (ICN) contends that nurses need to support actions seeking to reduce the effects of global warming and climate change on health. Consequently, nurses need to be aware of how climate change affects human health and how to address these potential health risks. Nurses have the potential to make an important contribution to sustainable development, described by the ICN as providing opportunities for groups, individuals and communities to create a healthy society (International Council of Nurses 2007, 2008). Despite this

statement, few studies have been published that analyse nurses' experiences, attitudes or knowledge concerning climate change and other environmental issues.

An American study addressing the knowledge and attitudes of public health nurses towards climate change indicates that nurses believe that climate change exists and that their profession has a responsibility to address the health effects of climate change. However, this study also reveals that nurses lack the ability to address the health effects of climate change (Polivka *et al.* 2012). In addition, a UK study by Richardson *et al.* (2013) reports that nursing students possess limited knowledge of the natural resources used in the production of items used in the healthcare sector.

Sustainable nursing work will be a key factor in the future development of the healthcare sector; furthermore, research is necessary to investigate how nursing care should be designed to respond to climate change (Sayre *et al.* 2010, Barna *et al.* 2012). A recent study by Holmner *et al.* (2014) supports replacing physical visits with telemedicine, e.g. teleconferencing, as a potent carbon reduction strategy in the healthcare sector.

By studying nurses' perceptions of climate and environmental issues and examining nurses' perceptions of how they can contribute to sustainable development, we can better understand how nurses can participate in climate change mitigation and adaptation to generate improved health outcomes.

The study

Aim

The aim of this study was to explore nurses' perceptions of climate and environmental issues and examine how nurses perceive their role in the creation of sustainable health care.

Design

The study was a qualitative, descriptive explorative study and involved individual in-depth interviews and focus group discussions. A qualitative research design was used to fully understand nurses' perceptions of climate and environmental issues and examine how they perceive their role in sustainable development.

Sample

The informants in the study were RN. To achieve rich variation in the data, the informants were chosen purposefully

to represent hospital care, primary health care and emergency medical services in a single county in Sweden. Informational letters were sent to the informants after conducting a personal enquiry, where the purpose of the study was presented.

Data collection

The data collection was conducted from April–October 2013 in Sweden. Eighteen nurses, a combination of women ($n = 15$) and men ($n = 3$), participated in the study. The study protocol included individual in-depth interviews ($n = 8$) and two focus groups ($n = 10$) lasting between 45–60 minutes. Informants in this study had 1–26 years of nursing experience.

First, in-depth interviews ($n = 8$) were conducted and analysed. The interviews were performed in a semi-structured format and focused on informants' views on climate and environmental issues. An interview guide was used and structured according to the purpose of this study (Table 1). Focus groups ($n = 2$) employing a semi-structured format were also conducted to achieve a deeper and broader discussion according to the study's objective. The first author performed all individual interviews and served as the moderator of the focus group discussions. According to Seidman (2006), the flexibility of a semi-structured interview allows researchers to discover areas worthy of consideration that arise during an interview, while an interview guide permits comparisons of the different interviews and focus groups.

Before the individual interviews and focus group discussions, the informants were provided written and verbal information concerning the study and informed consent was obtained. All interviews and focus group discussions were recorded digitally. After each interview, the first author listened to the recording once, which was transcribed verbatim. All of the above steps were performed to develop a comprehensive perspective on the data (Kvale & Brinkman 2009).

Table 1 Example questions from the interview guide.

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- What do you think of when you hear the topic of this study?
 - What can nurses do to achieve the goal of sustainable development?
 - To what extent do you talk about climate and environmental issues in your workplace?
 - What responsibility does the healthcare sector have as a stakeholder in climate and environmental issues?
 - What barriers exist that we have to overcome to achieve the goal of sustainable development?
-

Ethical considerations

Research Ethics Committee approval for the study was granted by Dalarna University Research Ethics Committee. Informed consent was obtained from all participants prior to the interviews. Participants were free to withdraw from the study at any time.

Data analysis

Qualitative content analysis was performed on the individual interviews and focus group discussions according to the methods of Granheim and Lundman (2004) and Krippendorff (2013). The transcribed texts from both the individual interviews and the focus group discussion were analysed together in one matrix. To structure and deduce the meaning of the transcribed text, it was organized and compared in a matrix with five different heading levels (meaning unit, condensed meaning unit, codes, sub-category and category); all headings aimed to capture the manifest content (Table 2). The focus of the analysis was to identify and describe similarities and differences in the content. During the procedure, central meaning units were lifted out from the transcript and were combined into condensed meanings; thereafter, the condensed meaning units were abstracted and coded. In the coding, the essence of the meaning unit, the manifest content, was clarified. The codes were compared based on similarities and were organized into sub-categories based on similarities between the codes. All sub-categories formed four main categories. Finally, the categories resulted in two themes. During the process of analysis, the meaning units were analysed by both the first author and research group together to reach consensus on the codes, categories and themes.

Rigour

Strategies were used to ensure a rigorous analytical approach. Trustworthiness (Beck 1993, Granheim & Lundman 2004) was achieved through a common qualitative content analysis method (Polit & Beck 2008) and a

parallel analysis by the authors to achieve consensus on the analysis. The researchers discussed the relationships between meaning units, codes, categories and themes as the interpretation proceeded. The authors' continuous discussion of the results ensured credibility and clarifying representative quotations from the transcript were added (Granheim & Lundman 2004). The participants were selected to include a variety of backgrounds to help corroborate findings related to numerous different areas in nursing, including hospitals, primary care and emergency medical services.

Findings

A total of four categories appeared and resulted in two themes: (i) incongruence between climate and environmental issues and nurses daily work; and (ii) public health work is regarded as a health co-benefit of climate change mitigation (Table 3). The categories describe how the informants perceived climate and environmental issues and how they could contribute to sustainable development. The perspectives are considered at both the professional and individual level. The categories are presented below and discussed using quotations from the interviews.

Being green is not a primary task in a lifesaving, hectic and economically challenging context

The informants said that climate and environmental issues are not the first priorities in their daily work with patients. They stated that their focus is on saving lives, preventing infection and preventing antibiotic resistance. They also said that the healthcare sector is reactive; therefore, the task of saving lives is the most important issue: 'We are very reactive in everything we do. And it is a big and important task for us to perform surgery on people who become ill instead of preventing them from becoming ill.' The informants stated that they were driven by a desire to support the patient and consider the patient's perspective. That one should 'always focus on the patient' was a frequently recurring phrase in the informants' responses. Their daily work requires substantial effort, leaving neither time nor energy

Table 2 Examples of meaning unit, condensed meaning unit, code, sub-category and category.

Meaning unit	Condensed meaning unit	Code	Sub-category	Category
'Yes, it could be the time. I do not think that, in a normal day, I would have time to think about the environment. Sure, throwing away a bag of antibiotics takes no time, but if there could be more of something, in this case, I think it would be time.'	In a typical day, we do not have time to think about the environment.	Lack of time.	Time as an obstacle to thinking about the environment.	Being green is not a primary task in a lifesaving, hectic and economically challenging context.

Table 3 Nurses' perceptions of climate and environmental issues outlined in sub-categories, categories and themes.

Sub-categories (examples)	Categories	Theme
Focus on infection, hygiene, safety and resistance. Focus on daily work leaves no time for other matters. Saving lives is important in healthcare. Time as an obstacle to thinking about the environment. The economy makes the environment come second.	Being green is not a primary task in a lifesaving, hectic and economically challenging context.	Incongruence between climate and environmental issues and nurses daily work.
The local perspectives on climate and environmental issues come first. The environment closest to the patient is the most important. Environment is equated with the work environment. The healthcare sector should engage more proactively.	Climate and environmental issues are considered from a local, not a global, perspective.	
Aware of the environmental problems. Transportation is not good for the environment. Drugs that are released into the environment are harmful to the environment.	Awareness of one's own responsibility to contribute to sustainability in healthcare.	Public health work is regarded as a health co-benefit of climate change mitigation.
Public health work as part of environmental work. Riding a bicycling to work is good for health and the environment. A healthy lifestyle is good for the environment.	Health objectives can provide environmental benefits.	

to consider environmental health: 'What is important? What is the first priority? Yes, the patient. The patient is here. The patient is the focus, you know.' The informants also considered hygiene and safety measures intended to prevent infections to be a central concern and their primary responsibility. Consequently, climate and environmental issues were less important.

They also said that the economy represented a substantial obstacle to addressing sustainability issues and that the health sector behaved as if the economy was more important than the environment: 'Then that is still the ultimate question. I feel that cost is the determining factor. It is crucial. Indeed. Yes I think so. Yes, cost is more important than the environment. This is my conviction.' The informants stated that the issues involved were too complex, overwhelmingly large and difficult to grasp and commented that the limited time available resulted in climate and environmental issues being relegated to the background. In addition, they believed that being 'green' was not a priority in their healthcare organizations. If they did occur, environmental questions and discussions were secondary. Thus, being innovative, for example, creating a programme of meat-free days at the hospital, was a challenge.

Climate and environmental issues are considered from a local, not a global, perspective

The local perspective on climate and environmental issues was most prominent. The informants reported that they only

had time to focus on their own ward and work at the hospital. They explained that the healthcare environment closest to the patient and their own work environment were the most important. Environmental issues were discussed in relation to the daily work environment concerning how the workplace is organized or how the psychosocial work environment is manifested. Climate change and its effects on health care at the global level were subordinate concerns: 'I sort waste and recyclables on the ward, but then. . . I don't go around and think about global warming. It does not feel important.' 'The environment around the patient should be good and a good bed and fewer other patients in the room.'

Awareness of one's own responsibility to contribute to sustainability in health care

Although climate and environmental issues were secondary, the informants expressed their responsibility to address climate and environmental issues in many areas. Their responsibility ranged from working more proactively, such as preventing illness through vaccination, to demonstrating awareness that climate and environmental issues are substantial and elusive but crucial: 'We understand that vaccination is proactive. There we have methods. We need to find new 'vaccines' for other areas, so to speak, not only for diseases but also for health.' The informants noted that their personal opinions on climate and environmental issues shape how they behave and think as nurses. As the healthcare sector consists of many individuals, the informants

believed that it also creates differences in values: 'The biggest problem with climate and environmental issues is that I start from what I believe. I have one point of view on what I think is good for the environment. We think very differently and we have different values about the environment. But I believe we have a responsibility.'

The informants were well informed that the release of a drug, such as an antibiotic or hormone-disrupting substance, has a negative impact on the environment. They also discussed the growing problem of antibiotic-resistant bacteria and they believed that they could contribute to sustainability by being frugal with resources and materials. They asserted that administering drugs also generated tremendous amounts of waste in the healthcare sector because of packaging. When the informants were asked to discuss how the healthcare sector could contribute to sustainable development, waste management and reduced material consumption were recurring topics: 'If we reduce the use of antibiotics and the number of prescriptions, this will 'reduce the use' and reduce environmental impact, but I don't think that the main factor influencing prescribing decisions has been the environment. It is the development of resistance and from a health perspective that is the most threatening thing.'

The informants were also aware of transportation challenges about sustainable development. Reducing travel was identified as a positive change for the environment; the nurses knew that they had a responsibility to reduce transportation. Travel by patients between their homes and healthcare facilities and travel by staff between various healthcare facilities are substantial contributors. Transportation of material was also mentioned as an important issue: 'We are discussing the transportation. That's where we have an environmental perspective. Globally, we have to travel less. If there is a product or if it is people, we have to travel less. It is like the foundation.' They compared the healthcare sector to other businesses and industries and considered how other industries had stricter requirements on environmental concerns than the healthcare sector: 'But this brings up the question of why the health sector has gotten away with less strict requirements compared to industry. Is it just because we have to throw away a lot of junk because what we do is vital? We do this for hygienic reasons and hygiene and health go along with each other. Is that why we get away with this? Because it is the matter of life and death?'

Health objectives can provide environmental benefits

The informants said that working towards sustainable development could be linked to various lifestyle programmes

offered at the clinic, such as tobacco cessation and weight loss programmes. Thus, even if working towards sustainable development was not a primary objective in their work, they described how various tasks created environmental benefits, such as patients' measuring their blood pressure at home and reporting it to the hospital or primary care provider using the Internet: 'I think you should link it to the lifestyle programmes. When you want to change your lifestyle, it would be possible to expand that desire and not simply stop at losing weight and quitting smoking. I will lose weight by biking more and in turn do something that makes a difference for the environment, like not using the car.'

Discussion

This study is one of the first to describe nurses' perceptions of climate and environmental issues. Research on public attitudes on climate change has demonstrated that positions on climate change correspond with demographical, ideological and institutional variables (O'Connor *et al.* 2002, Brechin 2003). For example, previous research on medical students' attitudes towards climate change revealed that these attitudes are mutable and coloured by how the attitudes appear with respect to medical opinion on climate change (Prasad *et al.* 2011).

This study revealed that the nurses had a local perspective on climate and environmental issues. They cited waste management on the wards and the work environment as the most crucial contributions that they make to a sustainable society. It is encouraging that nurses are aware that activities in their daily surroundings play an essential role in protecting the environment. However, none of the respondents mentioned sustainability at the global level. Their focus on the immediate environment might mean that the nurses lack a systemic thinking approach, i.e. individuals' behaviour in their immediate environment affects the entire world.

Healthcare professionals must be well aware of climate and environmental issues at the global level, such as the potential for more frequent and prolonged periods of high temperatures that could increase illness and mortality among the elder people and persons with heart disease (Poumadère *et al.* 2005), and health problems related to the spread of vector-borne diseases and food and water shortages due to increased temperatures. These factors are identified as some of the most critical global threats faced by the healthcare sector due to climate and environmental problems (St. Louise & Hess 2008, Costello *et al.* 2009, World Health Organization 2009). Consequently,

healthcare professionals may, for example, need to adjust the number of available beds in relation to the temperature. Thus, it is important for the healthcare sector to adopt a structure that supports an environmentally conscious approach.

In this study, the informants also expressed an awareness of their individual responsibility to positively influence the environment and be sustainable, but simultaneously, they said that broad issue of the effects of climate change on health appeared to be overwhelming and difficult to grasp. They noted that their personal opinions on climate and environmental issue shape how they behave and think as nurses. As a workplace consists of individuals, the question of how nurses can and should work to promote sustainability is substantially influenced by an individual's personal knowledge and opinions about environmental concerns. This is consistent with Lorenzoni and Pidgeon (2006), who demonstrated that individuals relate to climate change through personal experience, knowledge and trust in other actors and tend to engage with problems related to their local school or/and institutions and not problems at the global and international level.

We argue that although nurses have a responsibility to work towards a sustainable environment, the healthcare organization also has a responsibility to act. The director of Public Health and Environment at the World Health Organization stressed the paradox facing hospitals, with their core mission of curing and preventing illness, actually represent a threat to human health by contributing to climate change through their heavy use of energy and non-renewable resources (World Health Organization & Healthcare Without Harm 2009). The healthcare sector can play an important role in climate mitigation and adaptation activities. The healthcare sector is large and could become an important role model for other sectors of society. By being informed at work, individual staff members can be encouraged to 'bring home' what they have learnt and thereby further contribute to sustainability. If the healthcare sector is systemically engaged in sustainability efforts, this will support individual staff members, such as nurses, to achieve sustainability goals in their daily work.

A nurse's awareness of his/her own responsibility with respect to climate and environmental issues is important because it represents a foundation for efforts to shift the healthcare sector from unsustainable to sustainable development. The informants also said that although they were aware of climate problems and their responsibility in that area, this awareness seldom led to concrete actions, as such efforts were hampered by the performance of those tasks in

the nurses' daily work that were considered more important. It is extremely important that individual nurses be aware of their own responsibility. However, to act and create a truly sustainable workplace, healthcare organizations must strategically collaborate to address environmental issues. It is necessary to develop a structure that allows for a sustainability analysis of each activity at both the micro and macro level and an action plan for how individuals should act. Furthermore, this requires that healthcare organization adopt a sustainability perspective in all aspects of their activities, including services, education and research. There is a need for systems thinking and an integrated approach that transcends the traditional boundaries between disciplines.

This study also highlights the importance of introducing the topic of sustainability in nursing education. The topic should be incorporated throughout nursing education programmes. It is important that nursing students be prepared to cope with situations arising as a result of climate change. Society also requires knowledge of potential threats to human health that will occur as the climate changes. Nurses can be key actors in such efforts. There is nothing novel about this suggestion and should be considered a natural conclusion because nurses have long been held to have a responsibility to act in accordance with a pro-environmental perspective in the International Council of Nurses Code of Ethics (2012). It may be time to update this code. It is necessary to have a greater emphasis on the ecological context in studies of human health, and an increased understanding that humanity is part of social, political and economic systems.

Finally, an important finding of this study is the nurses' recognition that offering various lifestyle change programmes represented an indirect contribution to sustainable development and served as an ancillary effect of public health work. This type of contribution is generally termed the health co-benefits of climate change mitigation (Hosking *et al.* 2011). The informants said that the main focus in their patient care plans was to improve health or prevent illness by developing health goals, for example, riding a bicycle to work instead of travelling by car. The healthcare sector should take note of this method and relate health promotion to sustainable development. Hallberg (2010) and the Swedish National Institute of Public Health (2011) support this perspective and the latter argues that health promotion represents the foundation for healthcare sector's efforts to create a sustainable society. If good physical and psychosocial health is not established, the society will be unable to address broader global issues, such as sustainable development.

Limitations and strengths

A limitation of this study is that the findings offer a specific view related to one country. Although the study was conducted in Sweden, the topic of climate change is internationally relevant. Researchers from various countries have enriched nurses' knowledge and ability to pursue sustainable development, both globally and locally, in their work. An additional limitation concerned the first author's preconceptions of the subject. To minimize the risk of excessive pre-understanding, the interviews were performed using a pre-prepared interview guide. According to Kvale and Brinkman (2009), the use of a pre-prepared interview guide reduces the risk of bias. All authors also performed parallel analyses to increase trustworthiness, which can reduce the risk of preconceptions that can result in incorrect analyses. The use of both individual interviews and focus group discussions enriched and strengthened the data. The focus group discussions invited spontaneity and emotional expressions and the informants' statements and arguments were strengthened through their interaction with other nurses.

Conclusion

This study highlighted nurses' perceptions of climate and environmental issues and nurses' contributions to the process of sustainable development. The results reveal nurses have a core responsibility to address climate and environmental issues, but their sense of responsibility is overshadowed by other job requirements that are considered more important than identifying an environmentally sustainable approach to providing care. Therefore, climate and environmental issues are considered a second-order concern. We argue that nurses' attitudes and practices concerning climate and environmental issues must change and that the basis for such change is increased knowledge concerning the methods that the healthcare sector can employ to contribute to sustainable development. Nurses require greater knowledge to become involved in and support actions targeting climate change mitigation and to adapt to protect human health. Future theoretical studies and interventions should continue to explore this field and how nurses can contribute to the healthcare sector's knowledge of, preparedness for and contributions to sustainable development.

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Conflict of interest

None.

Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/ethical_1author.html)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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