



## Original Article

DOI: 10.36959/545/369

# Occupational Health Nurses' Wider Vision and Advocacy for a Greener, Safer World

Louise Terry, PhD, SFHEA, LLB (Hons), FIBMS<sup>1\*</sup> and Karen Bowman, MN, RN, COHN-S<sup>2</sup>

<sup>1</sup>Associate Professor and Reader in Law and Ethics, Department of Adult Nursing, School of Health and Social Care, London South Bank University, London, United Kingdom

<sup>2</sup>Occupational and Environmental Health Nurse, School of Nursing and Health Studies, University of Washington Bothell, United States of America

## Abstract

**Introduction:** Occupational health nurses (OHNs) have provided health support to workers for 140 years. Some adopt additional responsibilities beyond the workplace towards the wider community and the environment. This paper presents the OHN sub-set of a study involving (n = 40) nurses in America and the United Kingdom whose practice embraces activism regarding issues such as climate change, pollution and toxins. The aim was to capture why this OHN subset became environmental activists.

**Methods:** Focus groups, interviews and site visit observations were conducted. In both countries, participants comprised 7 experienced OHNs, and 1 aspiring OHN. Gadamerian phenomenology was employed. Data were thematically analyzed and a shared horizon where the researchers have stepped fully into the lifeworld of participants was identified.

**Findings:** Three themes emerged relating to (1) The wider vision of the OHN nurse which led to (2) Their advocacy for future health and (3) Advocacy for communities and the wider environment. The revealed horizon is that OHNs who become environmental activists recognize the holistic and temporal interconnectedness between the health of individuals, workplaces, communities, environment and the planet.

**Conclusion:** Occupational health nurses can be change-agents for community and planetary health, not just worker health when they expand their practice beyond the workplace to the wider community and the environment. More OHNs could use their skills to help combat threats to community and planetary health from industrial and environmental exposures.

## Introduction

Occupational health nurses (OHNs) have cared for workers around the world since J&J Coleman (Coleman's Mustard) employed the first recorded (industrial) nurse, Phillipa Flowerday, in 1878. Much of their practice is similar covering worker safety, health promotion, case management, industrial hygiene, education (Turkey: [1]; Hungary: [2]; America: [3]; Canada: [4]; Australia: [5]). Although their primary role is the health and well-being of workers, the International Code of Ethics for Occupational Health Professionals advises they "must contribute to environmental and community health" [6]. Environmentally-related illnesses and threats to health are increasing. New manufacturing practices introduce new hazards yearly. Climate change is potentially irreversible. All nurses should consider environmental factors [7-9]. Through their recognition of hazards, nurses can contribute to disease prevention [7]. Although OHNs' primary responsibility is to "advocate for worker health and safety" ([10] p.178) some develop their practice into advocacy and activism regarding the wider community and the environment.

There are around 3,400 OHNs [11] in the United Kingdom (UK) but the number who view environmental engagement as part of their roles is small. In the United States of America (USA), the incorporation of "environment" into their title as "Occupational and Environmental Health Nurses" and greater emphasis upon environmental issues in undergraduate nursing curricula possibly encourages environmental activism by US OHNs. Indeed, the new UK standards for undergraduate nursing curriculum fail to mention

**\*Corresponding author:** Dr. Louise Terry, PhD, SFHEA, LLB (Hons), FIBMS, Associate Professor and Reader in Law and Ethics, Department of Adult Nursing, School of Health and Social Care, London South Bank University, 103 Borough Road, London, SE1 0AA, United Kingdom, Tel: +44(0)207-8158-405

**Accepted:** October 12, 2019

**Published online:** October 14, 2019

**Citation:** Terry L, Bowman K (2019) Occupational Health Nurses' Wider Vision and Advocacy for a Greener, Safer World. *J Nurs Pract* 3(1):102-108

"environment" [12]. Many OHNs in America see themselves as having additional responsibility towards local and global populations and the world. These responsibilities are found in the *Competencies in Occupational and Environmental Health Nursing* [13]. However, Strasser's [14] critique of the previous version still stands, that there is no mention of the OHN's wider duty to local populations (except where they are the 'client') or to the world.

McCauley and Peterman ([15], p170) drew on the AAOHN [16] core curriculum to identify that OHNs "define the environment as the totality of the surrounding conditions including physical, sociocultural, organizational, economic, political and interpersonal dimensions or properties that influence an individual or community". They argue that, in America, occupational health nursing has "historically included the importance of environmental health policies to protect populations" ([15], p.170). Despite this, a 1999 survey of 2000 certified occupational and environmental health nurses and certified occupational health nurse specialists only referred to workplace environment [17]. More recently, an international survey of occupational health nurses' roles did not list "environment" anywhere in their table of OHN activities [3]. Nor does Harber, Alongi, & Su's [18] survey of 128 experienced OHNs across America indicate that anyone listed tackling environmental issues beyond the workplace in their activity logs. Thus, an inconsistent picture emerges from the literature in relation to OHN environmental activism or their lived experiences. The level of obvious environmental advocacy and activism appears less in the UK than the USA. The primary arguments supporting environmentally-responsible nursing are safety of care, environmental justice, economics and responsibility for future generations [19].

## Objectives

This paper presents the OHN sub-set of a wider study of the lived experiences of nurses in the USA and UK whose practice embraces activism regarding issues such as climate change, pollution and toxins. The aim was to understand why some OHNs develop their practice into environmental activism.

## Methodology

Gadamerian phenomenology was employed as its philosophical approach to truth requires entering the lifeworld of those under investigation [20,21]. The lead researcher is a non-nurse nurse educator and experienced researcher who brought an outsider perspective to the study. The insider perspective came from the co-researcher (OHN-R), an occupational and environmental nurse specialist. The personal perspectives of the truth-seeker are reshaped through considering those of others through dialogue. The process starts with capturing the perspective of the researcher(s) regarding the topic under investigation. Then, as each event (e.g. interview, observation) occurs, the researcher questions what it reveals, how it relates to the other insights gained from the events that have already occurred and how their perspective is shifting. Data analysis is not confined to the end of data collection. The re-

searcher is engaged with the process of generating codes and considering emerging themes from the start. At the end of data collection, in-depth immersion in the body of data and the final application of a thematic analysis process (in this case, Braun & Clarke's [22] six-steps) to the entire body of data is undertaken. Familiarization and immersion in the dataset during the analysis process was facilitated by a sabbatical granted to the lead researcher. An independent experienced researcher analyzed four transcripts. This iterative, reflective approach to data allows a new horizon (understanding) to emerge as the superordinate themes are synthesized. Guzys, et al. ([21], p.11) provide a useful diagram. The fusion of horizons between researcher and participants occurs when the researcher has stepped fully into the lifeworld of participants. OHN-R verified all codes, insights, themes and the new horizon. Findings were presented (one oral presentation, one poster) at conferences and received member verification from attending participants of this study.

Audio-recorded focus groups (congruent with phenomenology: Johnston [23]) were held. A semi-structured question schedule was used. These were followed by individual semi-structured interviews (face-to-face or remotely using telephone or video-conferencing to facilitate geographic spread of participants). These mirrored the previous questions but also probed points that emerged from the focus groups, observation visits and previous interviews. The lead researcher conducted all focus groups with OHN-R present and all but one of the interviews. The focus groups in America included public health nurses for reasons of logistical convenience as well as OHNs so the responses of the OHNs were separately identified.

Over twelve days in March 2017, OHN-R was shadowed allowing the lead researcher to understand her environmental engagement. Documentary material was collected with permission to provide insight into the nature of the environmental concerns. During a mirror visit (May 2017) to the UK, OHN-R shadowed another occupational health nurse (UK-I2) and was shadowed by the lead researcher during site visits and meetings with various organizations. The lead researcher's reflective research diary, interview transcripts and observational documentation were analyzed thematically allowing the new horizon to emerge [20].

## Sample

Purposive sampling was employed using direct email contact based on personal knowledge, online or research profiles and an announcement on the JISC Occupational health forum (<http://www.jisc.ac.uk>). JISC is a UK organization that provides digital support for education and research in universities and colleges and hosts specialist forums such as the OHN discussion board. The primary study (involving focus groups and interviews) recruited 23 US participants and 17 UK participants. Table 1 provides details of the OHN sub-set. The matching of OHN participants was serendipitous. Field and observation notes were kept and used iteratively as part of data analysis. Observation sites in both countries were selected to mir-

**Table 1:** Showing participant sample.

Focus Groups	OHN Participants	Practicing Occupational Health Nurse
US Focus Group 1 (6 participants in total)	US-FG1	Retired OHN and Professor
	US-FG3	Yes
	US-FG4	Yes
US Focus Group 2 (7 participants in total)	US-FG7	Yes
	US-FG9	RN seeking first position as OHN
US Interviews	US-I9	Yes
	US-I11	Retired OHN and policy maker
	US-I12	Yes
UK Focus Group (6 participants in total)	UK-FG1	Non-practicing OHN and Professor
	UK-FG2	Yes
	UK-FG3	RN with a BSc Environmental Sciences and an offer of a place on OHN program
	UK-FG4	Yes
	UK-FG5	Yes
UK Interviews	UK-I1	Non-practicing OHN and academic
	UK-I2	Yes
	UK-I3	Yes

ror each other as far as possible. They included two major destination-shopping centers, two state-run sites whose operations could threaten the lives of millions of people, a First Nations village and an eco-village in Scotland plus 'usual' workplace visits. University Ethics Committee and Institutional Review Board approvals were obtained. When observations were taking place, the people encountered were not part of the study so were not observed or audio-recorded but were informed about the study and consented to being visited.

## Findings

The essence of why some OHNs' practice has developed into environmental activism even when there may be little support to do so emerged through the consolidation of three super-ordinate themes. These related to (1) The wider vision of the OHN nurse which led to (2) Their advocacy for future health and (3) Advocacy for communities and the wider environment. The revealed horizon is that OHNs who become environmental activists recognize the holistic and temporal interconnectedness between the health of individuals, workplaces, communities, environment and the planet. Their vision extends beyond individuals, workers, employers and communities to national and global threats to the health of future communities and generations. In recognizing the reality of those threats, they feel compelled to act.

All participants displayed extensive in-depth scientific knowledge as would be expected since their role requires them to understand occupational and environmental hazards [7]. OHN participants saw their practice as more holistic than most nursing roles. UK-FG3 stated, "Healthcare's

very narrow-minded and focuses on hospitals and sick people and it doesn't really go about why they are sick". In both countries, most undergraduate nursing courses focus on individual patients rather than looking at the impact of the workplace or wider environment on health. "...they get drilled in the community level colleges just to think of that body as an engine... You do your pathophysiology... and then it's almost completely impossible to shove that aside and to have a different epistemology..." [murmured agreement] (US-FG7). However, in America, the registered nurse curriculum requires environmental and global health to be included. "If you look at the accreditation standards through the American Association of Colleges of Nursing, for a baccalaureate degree there has to be content on environmental health, on global health" (US-FG4). Also, "Standard 16 now incorporates environmental health practice in work and in the environment" (US-FG-OHN-R). Advocating for community health and environmental protection can be a slow process but participants were rightly proud when they succeeded. "...trying to raise community awareness... many children grow up in toxic environments... to see the [City Employer] recognizing a lot of these psychosocial factors and physical factors and environmental factors in that community and wanting to do something about it... it's fabulous" (US-FG8).

Participants moved into occupational health when they saw prevention as more necessary than treatment. Initially, this might be prevention of worker ill-health: "...the beginning of the high tech industry... using a lot of solvents that were making the workers sick, plus they also had traditional injuries... I loved working in the emergency rooms, but it seemed really counterproductive... why are we not prevent-

ing that stuff?" (US-FG1). An example was provided of how someone who is working in a bakery may become sensitized to flour dust and get asthma: "then they've got that for life... so you could just treat them... give them medication... but our role's thinking 'okay, why are they exposed to flour, should we be looking at control measures... things like local exhaust ventilation". There was pride as she said, "That's *our* role, and that's something special no other nurse could do" (UK-I1).

Even though 'environmental' is part of the title of OHNs in America, there was no evidence that this made their vision or practice different from UK counterparts. The extent to which the wider environment beyond the immediate workplace is part of the nurse's focus is often down to the individual nurse's experiences. US-FG9 commented, "I think the reason why I found such a value in the environment was because our family is not from here... our parents immigrated in the seventies... from [City] India. A lot of asphalt, heavily-populated, extremely poor air quality". The workplace advocacy of participants frequently became advocacy for the wider community.

The observations confirmed similarities in both countries regarding both worker health and larger issues. The nature of UK-I2's employer's business means that they are constantly on the alert for terrorist activities which could threaten millions of people in the UK: "we've got a lot of gases and chlorine canisters that have a big terrorism threat" (UK-I2) and threats of terrorist contamination of what their business produces. A US participant's engagement related to the risks of community exposure to radiation. One visit was to a site where a decommissioned nuclear reactor is leaking into the ground. Both cities where the researchers are based were impacted by major fires which displaced families and businesses. The US city fortunately had no loss of life unlike the UK city. Fires release toxic pollutants into the community and affect the health of emergency responders [24]. OHN students of the OHN-R engaged with the US city's first responders and citizens in the following months. UK-I1 advised regarding risks in the UK city.

OHNs recognize that industrial activities can result in healthcare harms to people living several generations later. UK-I3 related how, as a self-employed occupational health nurse, she investigated breathing problems (in some cases requiring hospitalization) that were affecting construction workers operating tunneling equipment on a multi-million pound publicly-financed project. She identified that the ground was toxic having been contaminated by Victorians dumping waste down disused wells. Construction was halted for six months during land decontamination. Prior to this, workers experienced toxic dust exposure, carrying it home and possibly onto public transport, thereby exposing many others to risk. On questioning, as with UK-FG4, her concern was primarily for human health with damage to the planet of little importance. Advocacy for both human and planetary health characterized other participants.

OHN-R and UK-I3 run their own occupational health companies meaning their wider vision of their role, articulated

in their contracts, provided freedom to act for the common good. One USA shadowing visit was to a new client whose business was manufacturing computer circuit boards which require a lot of immersions in large vats of chemicals. The observer experienced chest tightness during the visit and on exiting the building had to repeatedly cough to try to clear her lungs. Her notes read: "... you could smell what was in the air, and they had shifted the ceiling tiles so that they could then run some tubing up. It was actually a shared building with other companies... I bet those other companies have no idea and they are perhaps breathing this in... Outside [OHN-R] said, 'I will have to work really hard to maintain my scope - just do the training (in respirator use) and the fit tests'...said she could not take them on as a long-term client".

The participants in this study see beyond the individual patient. In both countries, there was frustration expressed that nursing organizations focus so much on preparing nurses to care for individual patients and have done little to advance occupational and environmental health nursing. "...the NMC [the UK nursing regulatory body, the Nursing and Midwifery Council] and occ. health doesn't necessarily meet anywhere in the middle. And the same with the RCN [Royal College of Nursing] as well" (UK-I2). "We could mention that the AACN goals, because that really drives things, and it's time for a rewrite but I don't really have a lot of hope that they're going to double down on the environment" (US-FG7). US-I11, whose career involved working for government agencies, national and international nursing organizations, complained that, "Through the ANHE [Alliance of Nurses for a Healthy Environment] we really worked toward encouraging integration of environmental health concepts across the curriculum... our goals and timeline was to have environmental health and climate change education in the NCLEX exam. That's been a little harder to accomplish...".

Resilience, perseverance and creativity are vital to environmental activism. "It is still a very tough fight to be accepted as someone knowledgeable in environmental health and have RN after your name" (US-FG1). Finding a nursing job that allows scope to embrace environmental issues is problematic in both countries. UK-FG3 reported, "I've got the knowledge. I'm passionate about [environmental issues]. I'm quite outspoken. I can be assertive but I have nowhere to say it" (UK-FG3). US-FG9 has similar challenges: "I had to fight to get my place in environmental health... I started with [Activist Organization] for a toxic-free future, published literature for them, writing... but I couldn't find a nursing voice, or funding". Turning to US-FG1, she continued "I really did have an opportunity to work on outdoor air quality with [City Park]... And it was awesome" (US-FG9). Finding a suitable platform also affected finding grant moneys as occupational and environmental health projects lacked 'fit' with funding bodies. US-FG7 challenged, "It's very hard to find funding...who do you submit to?... Is it really nursing anymore because you're going to be looked at and judged by a panel of nurses?... Or do you go to NIEHS where you are competing against the big dogs who have large scale projects, multiple health

departments, large projects" (US-FG7).

Although all participants considered themselves resilient, vocal nurses and environmental advocates, the American OHN participants seemed more strongly activist compared with the UK participants. "I remember joining [Nursing Association] on the legislative board and saying, 'I want to see every nurse in white with tennis shoes that light up and march on the capital at night'... I was voted down [laughter]" (US-FG1). One American participant was a nationally-renowned OHN (like UK-I1) and vigorous campaigner on health risks from environmental damage. Her leadership impacted on US-FG1. "[US-FG5], we were co-workers for years... looked at the emergency room admissions with the pollutants, particularly particulate matter PM2.5 during the energy crisis when they had to run generators in the tied flats as in [City] we didn't have enough electricity at that time" (US-FG1). The environmental activism of UK participants is being blocked because the OHN role is still misunderstood in the UK. When UK-I2's mother who was undergoing surgery introduced her as a nurse, the anesthetist asked where she worked. "I said, I work in occupational health... and he said, 'oh, why don't you come back to the ward and get a real job'". A lack of leadership in UK nursing and passivity on the part of most UK nurses was perceived. UK-FG1 was adamant that there needs to be a change in mindset. "We have got the power to stop those problems happening... We've got to start thinking 'I am a nurse and I *can* and I *will* and I *do* deserve to be heard". Fortunately, the leadership and impact of occupational health nurses in the UK is beginning to be recognized. The Queen's Nursing Institute was created by Queen Victoria to recognize and support nurses who were "doing something special" and "there are probably about ten Queen's Nurses that are occupational health nurses, now" (UK-I1).

## Discussion

The holistic practice and advocacy of OHNs arises from their insight into wider societal influences and recognition that workers have families and live in communities. Several US participants referred to Florence Nightingale's advocacy for community health; none of the UK participants mentioned her. In her "Notes on Nursing", Nightingale ([25], p.8) recognized that the conditions in which people lived (and worked) such as "the want of fresh air, or of light, or of warmth, or of quiet or of cleanliness" cause disease. American participants extrapolated Nightingale's concern to the wider environment to ensure communities and future generations are protected from ill-health whether the risks come directly or indirectly from industrial practices. This extrapolation is seen in the Total Worker Health® strategy which seeks to advance health as it recognizes how job-related factors impact on workers, families and communities [26]. There is no UK equivalent.

OHNs have potential to be environmentally-sustainable (ES) change-agents through influencing internal organizational practices and bringing the wider social impact to the employer's attention. They can "influence organizational culture and strategic direction" ([11], p.653). Sekerka and Stimel's [27] model for organizational ES decision-making

incorporates the impact of external social pressures upon organizations. UK-FG2's advocacy for a greener approach to sharps disposal gained her organization external esteem in the form of a national award. There was evidence, reflecting the literature review, that although there is a shared vision between the US and UK participants, the UK participants were more likely to see globally yet only act locally. However, each small change towards environmentally-friendly practices that an OHN brings about is "precedence for future ES decisions" ([27], p.200). Participants came from two of the wealthiest countries in the world. Arguably, only rich countries can afford to worry about future harms from environmentally-impacting practices [28]. OHNs in developing countries might struggle to challenge environmentally-damaging workplace practices particularly if they might risk the closure of manufacturers and the loss of local livelihoods. However, some of the participants are so inspiring that their influence is not merely incremental (solving specific problems) but is transformational. Inspirational people impact "the core of the organization" ([27], p.200). They can have national impact (like UK-I1) and international impact (like US-FG5).

All US participants were strong environmental activists. In contrast, it seemed that although their role sometimes incorporated protecting the wider community and planetary health, two of the UK participants remained primarily focused on individual health. UK-I3, when questioned about the toxic land case, focused on human health with the environmental damage of lesser importance. Pam Smith, the seminal author on emotional labor in nursing, identifies in her doctoral thesis that there is a difference between caring about and caring for. She wrote, "It is suggested that caring 'for', which is task-orientated, is more accurately described as 'tending'... it is possible to care for a person without caring about them" ([29], p.30). Arguably, UK-I3 cared about the workers but 'tended' the planet. Other participants cared passionately about the planet or the environment as well as the patient or worker. Campbell ([30], p.165) suggests the definition of passion as "intense, driving or overmastering feeling or conviction... describes the dedication which drives the daily work of occupational and environmental health nurses". She identifies how these nurses "passionately use their knowledge, skills and talent to ensure the health and well-being of... workers" ([30], p.165).

As this study identified, OHNs engage with complex science, biochemistry and epidemiological datasets and can reinterpret this for a lay audience. They can risk assess and determine probabilities regarding adverse health outcomes and educate patients, communities, policy makers and legislators [31]. Their skillset means they recognize the myriads of exposures that can threaten health and recognize the interconnectedness between individuals, communities, the environment and the planet. Exposure or sickness in one can impact others. These OHNs demonstrate "temporal interconnectedness" ([32], p.18) where they are constantly tying together the past and present, looking to the far-distant future and extrapolating back from the future to the present. Argu-

ably, this differentiates them from many bedside nurses. It also makes them ideal for speaking out on threats not just to worker health from employers' practices but also on threats to community health from industrial and environmental exposures. As corporate health impact assessments become more commonplace [33], OHNs have an important future role. As Wachs ([34], p.152) note, they should have "opportunities to impact legislation and policy initiatives, not only in the United States, but in every country".

In America, many nursing school curricula include environmental health and sustainability as part of undergraduate nurse education. Disappointingly, the Nursing and Midwifery Council Standards [12] for pre-registration education in the UK have no environmental health or sustainability competencies. Arguably, this is an example of environmental and sustainability leadership failure. Likewise, a consensus statement on the core competencies for UK OHNs makes no mention of sustainability and environmental impact seems limited to work environment [11]. As Seekerka and Stimel ([27], p.201) comment, "progressive organizations can exert influence outwardly, stimulating the cultivation of values in society". Another concern emerged from this project regarding the nursing shortages that exist worldwide. Among American participants, 'grey heads' prevailed yet, frustratingly for US-FG9, she was struggling to gain a post that paid as well as her hospital job. McCauley and Peterman ([15], p.171) suggest that America has a shortage of "1.2 million nurses" and that the number of OHNs due to retire was a particular concern as the need for them was greater than the number of nurses graduating with the specialist qualification. The cost of advanced practice specialist education is also a barrier [15]. UK-FG9 was concerned about affording the course that would admit her to Part 3 of the NMC Register as an OHN. As environmental health concerns rise with climate change, air pollution and a myriad of other threats to human health as a result of human and industrial activities, there needs to be more support for want-to-be OHNs. The passionate nurses in this study need people to whom they can pass their baton. More-affordable access to specialist education would help.

## Implications for Practice

Occupational health nurses have unique characteristics which make them particularly suited to helping protect communities, countries and future generations from environmental harms. They understand how manufacturing and businesses operate and can apply their skill set to environmental and sustainability concerns. In the UK, the environmental engagement of OHNs is still in its infancy and needs support. The main reason seems to be that UK nurse education ignores environmental issues and a lack of strong leadership role models discourages nurse activism in any area, not just environmental advocacy. Not all environmentally-engaged OHNs find a good fit within an organization. Employed nurses have dual responsibilities as occupational health nurses to their employer and the worker. Sometimes this creates a tension and a need to

apply professional judgment [35]. Therefore, it is understandable that many nurses might hesitate before they start acting upon any additional sense of responsibility towards the wider community or environment. This is possibly where US OHNs have an advantage over UK counterparts. There are more environmentally-engaged nurses in America so it is easier to find role models and supportive networks. Mentoring novices helps them learn environmental advocacy skills and how to testify to the legislature or write an effective response to consultation documents. In both countries, pioneers are retiring without their legacy of incorporating environmental health into the OHN role being consolidated. Incorporating environmentally-sustainable practices into OHN educational programs can help. Globally, OHNs working in developing countries likely find it challenging to incorporate wider environmental health concerns into their practice since halting business activities threatens jobs. Environmental protection can also be seen as counter to a desire to have the same material possessions as those in developed countries [36]. Nursing, though, is an altruistic, global profession although only one participant had a familial and cultural connection to a developing country. Sharing OHN environmental advocacy skills could help OHNs in developing countries play their part in protecting their communities from environmental harms.

## Conclusion

The lifeworld of the OHN environmental activist participants in this study is characterized by holistic vision and a sense of temporal interconnectedness. Metaphorically, they are sitting in a ship's crow's nest with a telescope, spotting what lies ahead. Occupational (and environmental) health nurses whose practice expands beyond the workplace to embrace community and planetary health are holistic, creative, problem-solving, visionary nurses whose advocacy is preventing future health care harms from avoidable industrial and environmental risks. Their passion needs embracing, supporting and developing in their counterparts worldwide.

## Conflict of Interest

This study was funded by a research sabbatical awarded to the lead researcher. There are no other potential conflicts of interest.

## References

1. Ornek OK, Esin MN (2015) Occupational health nursing in Turkey: An international update. *Workplace Health Saf* 63: 33-38.
2. Hirdi HE, Hong O (2014) Occupational health nursing in Hungary. *Workplace Health & Safety* 62: 421-430.
3. Rogers B, Kono K, Marziale MH, et al. (2014) International survey of occupational health nurses' roles in multidisciplinary teamwork in occupational health services. *Workplace Health Saf* 62: 274-281.
4. Alleyne J, Bonner A (2009) Occupational health nurses' roles, credentials and continuing education in Ontario, Canada. *AAOHN Journal* 57: 389-395.

5. Mellor G, St John W (2007) Occupational health nurses' perceptions of current and future roles. *J Adv Nurs* 58: 585-593.
6. International Commission on Occupational Health (2012) International code of ethics for occupational health professionals.
7. Institute of Medicine (1995) *Nursing, Health & the Environment*. National Academy Press, Washington DC.
8. Salazar M (2000) Editorial: Environmental health: Responding to the call. *Public Health Nursing* 17: 73-74.
9. Vandali V, Biradar R (2018) Impact of environment on health: Nurses' role. *Journal of Clinical and Nursing Research* 2: 3-6.
10. Rogers B (2012) Occupational and environmental health nursing: Ethics and professionalism. *Workplace Health Saf* 60: 177-181.
11. Laloo D, Demou E, Kiran S, et al. (2016) Core competencies for UK occupational health nurses: a Delphi study. *Occup Med (Lond)* 66: 649-655.
12. Nursing and Midwifery Council (2018) Part 3: Standards for pre-registration nursing programmes. NMC, London.
13. American Association of Occupational Health Nurses (2015) Competencies in occupational and environmental health nursing. *Workplace Health & Safety*, 484-492.
14. Strasser PB (2012) Occupational and environmental health nursing: The foundations of quality practice. *Workplace Health & Safety* 60: 151-157.
15. McCauley L, Peterman K (2017) The future of occupational health nursing in a changing health care system. *Workplace Health Saf* 65: 168-173.
16. American Association of Occupational Health Nurses (2013) Fundamentals of occupational and environmental health nursing AAOHN core curriculum. (4<sup>th</sup> edn), AAOHN, Pensacola, FL.
17. Salazar MK, Kemerer S, Amann MC, et al. (2002) Defining the roles and functions of occupational and environmental health nurses: Results of a national job analysis. *AAOHN Journal* 50: 16-25.
18. Harber P, Alongi A, Su J (2014) Professional activities of experienced occupational health nurses. *Workplace Health & Safety* 62: 233-242.
19. Kangasniemi M, Kallio H, Pietilä AM (2014) Towards environmentally responsible nursing: A critical interpretive synthesis. *J Adv Nurs* 70: 1465-1478.
20. Fleming V, Gaidys U, Robb Y (2003) Hermeneutic research in nursing: Developing a Gadamerian-based research method. *Nurs Inq* 10: 113-120.
21. Guzys D, Dickson-Swift V, Kenny A, et al. (2015) Gadamerian philosophical hermeneutics as a useful methodological framework for the Delphi technique. *Int J Qual Stud Health Well-being* 10: 26291.
22. Braun V, Clarke V (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology* 3: 77-101.
23. Johnston JH (2009) The preparation of child health nurses in sexual health education: An exploratory study. *Nurse Education Today* 29: 845-849.
24. Corder A, Rodgers KM, Brown P, et al. (2014) Firefighters and flame retardant activism. *New Solut* 24: 511-534.
25. Nightingale N (1860) *Notes on Nursing: What it is and what it is not*. Harrison & Sons, London.
26. NIOSH (2016) Fundamentals of Total Worker Health® approaches: Essential elements for advancing worker safety, health, and well-being. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Cincinnati, OH.
27. Sekerka LE, Stimel D (2012) Environmental sustainability decision-making: Clearing a path to change. *Journal of Public Affairs* 12: 195-205.
28. Davey I (2009) Environmentalism of the poor and sustainable development: An appraisal. *JOAAG* 4.
29. Smith P (1988) Quality of nursing and the ward as a learning environment for student nurses: A multimethod approach.
30. Campbell K (2017) History, passion and performance. *Workplace Health & Safety* 65: 164-167.
31. Colvin NE, Mahan PL, Harris J (2016) Methylmercury exposure in women of childbearing age and children. *Workplace Health & Safety* 64: 550-555.
32. Luke J (1992) Managing interconnectedness. In: M Bailey, R Mayer, *Public management in an interconnected world*. Greenwood Press, Westport, CT, USA, 13-23.
33. Baum F, Sanders D, Fisher M, et al. (2016) Assessing the health impact of transnational corporations: Its importance and a framework. *Globalization and Health* 12: 27.
34. Wachs JE (2017) The American association of occupational health nurses: Seventy-five years of education, practice and research. *Workplace Health & Safety* 65: 148-153.
35. Thompson MC (2012) Professional autonomy of occupational health nurses in the United States. *Workplace Health & Safety* 60: 159-165.
36. Tuncay B, Yilmaz-Tüzün O, Tuncer Teksoz G (2012) Moral reasoning patterns and influential factors in the context of environmental problems. *Environmental Education Research* 18: 485-505.

**DOI: 10.36959/545/369**