

## Nursing and Biodiversity Literature Round-up

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This literature review is focused on nursing and biodiversity. Some key questions were; What impact does healthcare have on the disruption of ecosystems and biodiversity? How can nurses support and improve biodiversity? What benefits are gained by the healthcare system when biodiversity is considered and cared for? We have included literature found from a variety of countries, as we believe that research and findings from any location could be informative and may have applications in the UK, as well as allowing us to see the gaps in research and questions that still need to be asked. The results are focused from 2021 to 2023.

Key themes identified in the literature;

- Diversity of microbial life
- Rising prevalence of zoonotic infections as a result of ecosystem disruption, and the potential for nurses to respond to crises and support prevention and control
- The importance of green spaces for public health and well-being
- Impacts of food sources on health and wellbeing

### **The impacts of habitat and ecosystem disruption, and our changing relationship with the natural world.**

Our changing relationship with the natural world has exposed us to many new infections and health risks. Through the destruction of habitats and our encroachment into new areas of nature we have become exposed to zoonotic infections such as the Marburg and Ebola viruses, tick-borne illnesses such as Lyme disease and many mosquito-borne illnesses. Through our industrialised relationship with animals as a food source we are more at risk from viruses such as swine and avian flu and have been exposed to serious consequences of large-scale meat production in the form of CJD. The change in our climate is also impacting our ability to source materials and medicines, and natural disasters such as wildfires present new challenges to community nursing and healthcare system planning.

- **Murage P, Batalha H R, Lino S, Sterniczuk K. (2021) From drug discovery to coronaviruses: why restoring natural habitats is good for human health *BMJ* 2021; 375 :n2329 doi:10.1136/bmj.n2329**

**Abstract** – “Peninah Murage and colleagues argue that biodiversity is the cornerstone of healthy natural habitats. Its preservation is vital to human health and should therefore be embedded into medical and healthcare studies. The restoration and protection of natural habitats enhance biological diversity (biodiversity; box 1). These two concepts (natural habitats and biodiversity) are interdependent because complex symbiotic interspecies relationships are the foundation of thriving natural habitats. Nearly every aspect of our survival depends on exploiting natural resources—when land is converted for food production and housing, for example, or for the extraction of energy, raw materials, and water. The unsustainable use of natural resources has led to short term improvements in human health characterised by increases in life expectancy and a global decline in poverty.<sup>1</sup> But these are matched by an unprecedented alteration of the natural world characterised by loss of primary forests, species extinction, concentration of greenhouse gases, and ocean acidification, among others.<sup>1</sup> This has perilous consequences to the planet and to human health in the long term.”

- Hicks, R., Blackwell, C. (2023) An early pop-up mpox vaccine clinic. *Journal of the American Association of Nurse Practitioners*. 35(4), 226-228. Available at: [https://ovidsp-dc1-ovid-com.nottingham.idm.oclc.org/ovid-a/ovidweb.cgi?&S=KEADFPKMJEACNKCIKPLJFFPKIKEMAA00&Link+Set=S.sh.22.23.27.31%7c2%7csl\\_10&Counter5=TOC\\_article%7c01741002-20230400-00002%7cyrovft%7covftdb%7cyrovftz](https://ovidsp-dc1-ovid-com.nottingham.idm.oclc.org/ovid-a/ovidweb.cgi?&S=KEADFPKMJEACNKCIKPLJFFPKIKEMAA00&Link+Set=S.sh.22.23.27.31%7c2%7csl_10&Counter5=TOC_article%7c01741002-20230400-00002%7cyrovft%7covftdb%7cyrovftz) Abstract- “Mpox, formerly known as monkeypox, emerged as a viral zoonotic disease in 2022. The World Health Organization (WHO) declared a global pandemic in July 2022. Through the U.S. Food and Drug Administration's emergency use authorization, JYNNEOS became the dominant vaccine for prevention of mpox. California leads the nation in the number of U.S. cases, and the outbreak created opportunities for a nurse practitioner-led pop-up vaccination clinic in Los Angeles County. Interprofessional teamwork with pharmacists and public health officials increased the number of individuals vaccinated. By November, the WHO released operational planning guidelines. Nurse practitioners can use these guidelines in anticipation of the next pandemic.”

*Note- a piece written by an American Nurse Practitioner about their experience of setting up a vaccination programme for mpox (a zoonotic infection). A useful example of how nurses can work with the multidisciplinary team (pharmacists, public health officials) to lead responses to global health emergencies.*

- Aggarwal, D., Swain, S., Ramachandran, A., Chaturvedi, V., Kumar, Sanjiv. (2020). Changing role of nursing cadre under emerging zoonotic diseases. *Indian Journal of Community Medicine*. 45(5), 9-11. Available at: <https://www.proquest.com/docview/2382957199/fulltextPDF/64F594FC7EB0464APQ/1?accountid=8018> Abstract- “With the launch of new Government of India’s initiative Ayushman bharat that envisages conversion of all subcenters into health and wellness centers, the role of nursing professionals in primary health care will be undergoing paradigm shift. Nurses are approximately two-third of the population of health workforce in India. Nurses’ scope of work has widened with additional roles and responsibilities due to shift in the pattern of burden of diseases. The emergence of zoonotic infectious diseases has further enlarged their responsibilities. The main areas, which need attention, are development of nursing workforce, selection and recruitment, placement as per specialization, and preservice and in-service training related to zoonotic surveillance. This article attempts to discuss the role of nurses under emerging zoonotic disease infections.”

*Note- An article from an Indian nursing journal considering the need for changes to nursing education to cover the prevalence of zoonotic infections in communities. With public health and preventative measures (screening, immunisation programmes etc) forming part of our nursing curriculum, an understanding of how changes to biodiversity (deforestation, disruption to ecosystems) can expose our populations to zoonotic infections could benefit nursing students worldwide.*

- Zang, S.M. et al. (2021) ‘The intersection of climate change with the era of COVID-19’, *Public health nursing (Boston, Mass.)*, 38(2), pp. 321–335. doi:10.1111/phn.12866. Abstract – “The purpose of this integrative review is to examine recent literature on the intersection of SARS-CoV-2 (COVID-19 novel coronavirus) and climate change that will lead to a greater understanding of the complexities of the urgent pandemic linked with the emerging climate crisis. A literature search for peer-reviewed, English language, literature published since the pandemic emerged was conducted using Cumulated Index to Nursing and Allied Health Literature (CINAHL), PubMed, and the Cochrane Library. The final sample yielded a total of 22 commentaries, editorials, discussion papers, and a research study that explicitly addressed the intersection of COVID-19 and climate change. Sixty articles emerged in the initial review of the intersection of the COVID-19

pandemic and climate change with the final yield of 22 articles deemed valid for inclusion after full text review. With the emergence of COVID-19 and scholarly discourse that addresses the intersection of the pandemic with climate change, key issues emerged that intersect with policy /advocacy, social justice, and nursing's public health role in clinical practice, education, policy/advocacy, and research/scholarship. Five themes that emerged included the *role of public health in COVID-19 and climate change efforts; global approach addressing human-environment issues; intersection of COVID-19 and climate change from a community and global perspective; impacts of COVID-19, climate change and the environment and professional associations and specialty organizations' views and responsibilities with a lens on COVID-19 and climate change*. Despite the importance of addressing racial inequities as well as systemic and structural racism that impacts those most affected by climate change and pandemics such as COVID-19, no literature addressed this topic. Public health nursing has a critical role in addressing climate change and the pandemic response to COVID 19 in the 21st century.”

- **Carnall, V., Murdock, S., Auckland, C., Mulgrew, C. (2020) Along came a spider: an unusual organism identified in a peritoneal dialysis patient, a case report and literature review. *BMC Nephrology*. 21(1), 1-5. Available at: [https://link.springer-com.nottingham.idm.oclc.org/article/10.1186/s12882-020-02099-8](https://link.springer.com/nottingham.idm.oclc.org/article/10.1186/s12882-020-02099-8)**

**Abstract-** “Background

Peritoneal dialysis-associated peritonitis can uncommonly be caused by fungal infections. When they do present, they are associated with significant mortality and morbidity. We describe a case where a sample of peritoneal dialysate fluid grew *Rhodotorula muciliginosa*, a yeast organism present in the normal environment which has previously been reported as rarely causing peritonitis. We believe this is the first case where the *Rhodotorula* spp. and its origin has been identified.

Case presentation

A 20 year old male grew *Rhodotorula muciliginosa* from his peritoneal dialysis fluid on three separate occasions when a fluid sample was sent following a disconnection and subsequent set change. He was not systemically unwell and his peritoneal dialysate was clear. As *Rhodotorula* spp. is exceedingly difficult to treat our patient had his Tenckhoff catheter removed. Subsequent samples of soil and sand from his bearded dragon and Chilean tarantula cases, kept in his bedroom where dialysis occurred, were tested. The tarantula sand was identified as the source of the *Rhodotorula* spp. Of note, *Candida* was isolated from sand from the bearded dragon case. Once his Tenckhoff was removed he was treated with an intravenous course of antifungal therapy. He has since had a new Tenckhoff catheter inserted and recommenced PD following education around pets and hygiene.

Conclusions

In this era where people are keeping increasingly rare and unusual wildlife in their homes, this case highlights the need for clinician and nursing staff awareness of a patient's home environment and hobbies when they are undergoing peritoneal dialysis. Sand from our patient's tarantula case grew the colonising organism but interestingly soil from his bearded dragon case also isolated *Candida*. This can also cause difficult to treat peritonitis.”

- **Ge, Y. et al. (2022) ‘Identifying Seasonal and Diurnal Variations and the Most Frequently Impacted Zone of Aerosols in the Aral Sea Region’, *International journal of environmental research and public health*, 19(21), p. 14144. doi:10.3390/ijerph192114144.**

**Abstract –** “Vertically, the occurrence frequencies of all aerosol subtypes except dust showed significant diurnal variation at all levels. The thickness of polluted dust layers and dust layers exhibited same seasonal and diurnal variations with a value of more than 1.0 km year-round, and the layer thickness of clean continental and polluted continental/smoke shared the same seasonal and diurnal variation features. The zone most severely impacted by aerosols from the Aral Sea region, covering an area of approximately 2 million km<sup>2</sup>, was mainly distributed in the vicinity of the Aral Sea region, including western Kazakhstan, and most of Uzbekistan and Turkmenistan. The results provide direct support for positioning monitoring of aeolian dust deposition and human health protection in the Aral Sea region.”

- **Mencattelli, G. et al. (2022) 'Epidemiology of West Nile virus in Africa: An underestimated threat', *PLoS neglected tropical diseases*, 16(1), pp. e0010075–e0010075. doi:10.1371/JOURNAL.PNTD.0010075.**

**Abstract** – “West Nile virus is a mosquito-borne flavivirus which has been posing continuous challenges to public health worldwide due to the identification of new lineages and clades and its ability to invade and establish in an increasing number of countries. Its current distribution, genetic variability, ecology, and epidemiological pattern in the African continent are only partially known despite the general consensus on the urgency to obtain such information for quantifying the actual disease burden in Africa other than to predict future threats at global scale.”

- **Wagner, E. et al. (2022) 'First Indications of Omsk Haemorrhagic Fever Virus beyond Russia', *Viruses*, 14(4), p. 754. doi:10.3390/v14040754.**

**Abstract** – “In this paper, we present a broad investigation of the spread of OHFV in Kazakhstan in human cerebrospinal fluid samples, rodents and ticks. Our study shows for the first time that OHFV can not only be found in the area of Western Siberia in Russia, but can also be detected up to 1.600 km away in the Almaty region in patients and natural foci.”

- **Watts, T., Brugger, S. (2022). Paleofire data for public health nursing wildfire planning: A planetary perspective. *American Public Health Association*. 112, 241-244. Available at:**

[https://www.proquest.com/docview/2717341546?accountid=26447&parentSessionId=%2BhPYfb0K5TCnihG5q1fUUBeyp3H%2FfQbeBtPk2Hp3yMI%3D&pq-](https://www.proquest.com/docview/2717341546?accountid=26447&parentSessionId=%2BhPYfb0K5TCnihG5q1fUUBeyp3H%2FfQbeBtPk2Hp3yMI%3D&pq-origsite=summon)

[origsite=summon](https://www.proquest.com/docview/2717341546?accountid=26447&parentSessionId=%2BhPYfb0K5TCnihG5q1fUUBeyp3H%2FfQbeBtPk2Hp3yMI%3D&pq-origsite=summon) **Abstract-** “Public health is increasingly threatened by global warming, land use, and changing wildfire patterns that shape vegetation type, structure, and biodiversity and ultimately affect ecosystem services and our society.<sup>1</sup> Uncontrolled large wildfires emit greenhouse gases and aerosols that induce direct and indirect climate feedback through radiative forcing in the atmosphere<sup>2</sup> and irreversible changes of natural vegetation, thereby further accelerating climate change and associated fire risks.<sup>3</sup> Wildfires are also harmful to human health because they create high pollution concentrations of fine particulate matter that are 2.5 micrometers or smaller (PM<sub>2.5</sub>) and concentrations of coarse particulate matter that are between 2.5 and 10 micrometers in size. When inhaled, particulate matter significantly increases a myriad of health outcomes, including overall mortality, cardiovascular mortality, and emergency department visits for respiratory morbidity, congestive heart failure, chronic obstructive pulmonary disease, and angina.<sup>4,5</sup> Between July and October 2020, high PM<sub>2.5</sub> concentrations from massive wildfires surrounding a large regional hospital in the western United States were associated with a 6% increase in COVID-19 cases.<sup>6</sup> Risks for developing adverse health effects from wildfire smoke are greatest among people who are living with chronic conditions; who are experiencing intergenerational racial, economic, and housing discrimination; and who are facing social inequities from the COVID-19 pandemic.<sup>4</sup> The unprecedented recent wildfires in the western United States and their ill effects on human health and society, as well as the multiple other threats to people and places brought about by climate change, draw attention to the increasing urgency of developing new public health approaches and long-term adaptation strategies to support future population health.

Public health nurses routinely work with people living in communities affected by wildfires, and they provide care such as health assessment, referrals to health and social services, education, shelter care, case management, disease surveillance, screening, vaccination, and collaborative planning. New cross-disciplinary perspectives and collaborations to inform and implement more effective strategies to address threats to population health are urgently needed. Planetary health is a crossdisciplinary perspective that explains how humans and natural systems are connected and how the exploitation of ecosystems and natural resources anywhere is damaging to the health of the planet.<sup>7</sup> Planetary health is also a crossdisciplinary social and scientific movement that aims to protect and improve the health of the planet and all its inhabitants.<sup>7</sup> Understanding past wildfire events can help determine effective adaptive strategies for future public health nursing services that support planetary health.”

## **Biodiversity in Microbial life**

Some of the smallest life forms in our ecosystem can have a big impact!

- **Roslund, M. I. et al. (2021). Long-term biodiversity intervention shapes health-associated commensal microbiota among urban day-care children. *Environment International*, Volume 157, December 2021, 106811. Elsevier.**  
**Abstract** – “In modern urban environments children have a high incidence of inflammatory disorders, including allergies, asthma, and type 1 diabetes. The underlying cause of these disorders, according to the biodiversity hypothesis, is an imbalance in immune regulation caused by a weak interaction with environmental microbes. In this 2-year study, we analyzed bacterial community shifts in the soil surface in day-care centers and commensal bacteria inhabiting the mouth, skin, and gut of children. We compared two different day-care environments: standard urban day-care centers and intervention day-care centers. Yards in the latter were amended with biodiverse forest floor vegetation and sod at the beginning of the study.”
- **Habibi, N., Mustafa, AS., Khan, MW. (2021) Composition of nasal bacterial community and its seasonal variation in health care workers stationed in a clinical research laboratory. *Public Library of Science*. 16(11). Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0260314>**  
**Abstract** – “The microorganisms at the workplace contribute towards a large portion of the biodiversity a person encounters in his or her life. Health care professionals are often at risk due to their frontline nature of work. Competition and cooperation between nasal bacterial communities of individuals working in a health care setting have been shown to mediate pathogenic microbes. Therefore, we investigated the nasal bacterial community of 47 healthy individuals working in a clinical research laboratory in Kuwait. The taxonomic profiling and core microbiome analysis identified three pre-dominant genera as *Corynebacterium* (15.0%), *Staphylococcus* (10.3%) and, *Moraxella* (10.0%). All the bacterial genera exhibited seasonal variations in summer, winter, autumn and spring. SparCC correlation network analysis revealed positive and negative correlations among the classified genera. A rich set of 16 genera ( $q < 0.05$ ) were significantly differentially abundant (LEfSe) across the four seasons. The highest species counts, richness and evenness ( $P < 0.005$ ) were recorded in autumn. Community structure profiling indicated that the entire bacterial population followed a seasonal distribution ( $R^2=0.371$ ;  $P < 0.001$ ). Other demographic factors such as age, gender and, ethnicity contributed minimally towards community clustering in a closed indoor laboratory setting. Intra-personal diversity also witnessed rich species variety (maximum 6.8 folds). Seasonal changes in the indoor working place in conjunction with the outdoor atmosphere seems to be important for the variations in the nasal bacterial communities of professionals working in a health care setting.”

*Note- An interesting angle on biodiversity in healthcare – what impact do we, as healthcare workers travelling and comingling with each other, have on the diversity of microbes in our places of work.*

## **The impact of food sources on health and wellbeing**

You are what you eat, and a sustainable way to grow a wide variety of foods is key to creating a sustainable world. Good diet is an important part of a healthy lifestyle and caring for our natural world allows us to grow nutritious food and support our wellness.

- **Gualtieri, P. et al. (2022) ‘Exploring the Sustainable Benefits of Adherence to the Mediterranean Diet during the COVID-19 Pandemic in Italy’, *Nutrients*, 15(1), p. 110. doi:10.3390/nu15010110.**  
**Abstract** – “This study aimed to identify adherence to the Mediterranean diet (MedDiet) and its effect on health and environmental and socioeconomic sustainability during the COVID-19 pandemic

among a sample of the Italian population. Notably, it intended to assess the effect of adherence to the MedDiet on ecological footprints and food expenditure. A survey was conducted from the 5th to the 24th of April 2020 on Google Forms. The MEDAS questionnaire was used to determine the level of adherence to the MedDiet. The carbon footprint (CO<sub>2</sub>), water footprint (H<sub>2</sub>O), and food cost were calculated. In total, 3353 participants completed the questionnaire, ranging from 18 to 86 years old. A statistically significant difference was observed in the CO<sub>2</sub> and H<sub>2</sub>O among BMI groups ( $p < 0.001$ ). The low- and medium-MEDAS groups showed higher CO<sub>2</sub> ( $p < 0.001$ ). The food cost (EUR/week) resulted in statistically significant differences among the MEDAS groups. The CO<sub>2</sub> results were significantly lower in organic-market buyers compared to non-organic-market buyers ( $p < 0.001$ ). Public health must promote awareness of how adhering to a healthy lifestyle and making appropriate food choices can positively impact our health and social and economic well-being.”

- **Cupelli, L. (2021) From the Ground Up: An Immersive Farm Experience for Nursing Students. *Creative Nursing*, 27(4), 257-261.** Abstract- “This personal narrative describes the author's experience of taking a diverse group of nursing students to a farm where they were shown the interconnections of healthy soil, quality food, and human health. Students observed the key components of sustainable farming and soil biodiversity through multiple hands-on activities. Participation included tasting and harvesting the vegetables from the ground up. As future educators, it is important for nursing students to think of food as part of an ecosystem and to promote healthy, agricultural growing practices to protect the environment and public health.”

### **The importance of nursing in enacting change**

Nursing is a respected and trusted profession, and the 2022 IPSOS veracity index with 89% of people in the UK stating that they would trust a nurse to tell the truth (<https://www.ipsos.com/en-uk/ipsos-veracity-index-2022>). As a profession trusted by the public, and dedicated to promoting health and preventing illness, nurses are well placed to educate, inform, and empower people to make sustainable changes and take action.

- **Atwoli, L. et al. (2021) ‘Call for emergency action to limit global temperature increases, restore biodiversity, and protect health Wealthy nations must do much more, much faster’, *Nursing inquiry*, 28(4), p. e12454. doi:10.1111/nin.12454.**  
**Abstract** – “The UN General Assembly in September 2021 will bring countries together at a critical time for marshalling collective action to tackle the global environmental crisis. They will meet again at the biodiversity summit in Kunming, China, and the climate conference (COP26) in Glasgow, UK. Ahead of these pivotal meetings, we—the editors of health journals worldwide—call for urgent action to keep average global temperature increases below 1.5°C, halt the destruction of nature, and protect health.”
- **Ann Kurth and Teddie Potter, 2022: The Public Health Crisis Is Planetary—and Nursing Is Crucial to Addressing It. *American Journal of Public Health* 112, S259\_S261, <https://doi.org/10.2105/AJPH.2022.306877>**  
**Abstract** – “If the Earth were our client, her status would be multisystem failure. She is not ready for hospice, but she does need intensive care to survive. Signs and symptoms include catastrophic wildfires, unprecedented and extended periods of severe heat, climate-related disasters of historic proportions, massive biodiversity loss, deforestation and desertification of the land, emerging infectious and zoonotic diseases including COVID-19, severe air pollution, and changes in water quality and availability. Each of these changes profoundly impacts the health of humans and often impacts structurally vulnerable populations disproportionately.”
- **Chaiard, J. and Turale, S. (2022) ‘Nursing: The critical need to address climate change and to protect health’, *Journal of nursing scholarship*, 54(1), pp. 5–6. doi:10.1111/jnu.12739.**



**Abstract** – “Unless one has been living in a self-imposed bubble, one cannot have failed to notice the increased prominence of news about climate change. We are now living through a health and social emergency era that involves climate change, global warming, and the effects of the COVID-19 pandemic. The effects of greenhouse gas on climate change and the rising temperature of the Earth are leading us all down a slippery slope to eventual human extinction unless all countries make a determined and collective effort.”

- **LeClair, J., Watts, T. and Zahner, S. (2021) ‘Nursing strategies for environmental justice: A scoping review’, *Public health nursing (Boston, Mass.)*, 38(2), pp. 296–308. doi:10.1111/phn.12840.**

**Abstract** – “Objective: To describe types of strategic actions nurses take to promote environmental justice (EJ) through research, education, advocacy, and practice (REAP) reported in peer-reviewed literature. Design and Sample: A scoping review of literature was conducted that described EJ nursing strategies and included nurses listed as authors, subjects, partners, or organizational members. The sample consisted of 35 articles, representing 24 primary research studies and 11 nonresearch articles. Data were separately analyzed by research and nonresearch articles for a clearer understanding of evidence-based strategies within domains of REAP. Results: Articles in the sample highlighted the importance of authentic community partnership and represented diversity of nursing strategies that addressed a range of environmental exposures and subsequent health and racial inequities. Climate justice, a concept that emerged from the EJ movement and intersects with planetary health, is a recent focus in professional nursing.”

- **Logan, A.C., Berman, B.M. and Prescott, S.L. (2021) ‘Earth Dreams: Reimagining ARPA for Health of People, Places and Planet’, *International journal of environmental research and public health*, 18(23), p. 12788. doi:10.3390/ijerph182312788.**

**Abstract** – “Bold new approaches are urgently needed to overcome global health challenges. The proposed Advanced Research Projects Agency for Health (ARPA-H) is intended to provide rapid health breakthroughs. While new technologies for earlier disease detection and more effective treatment are critical, we urge equal attention be given to the wider (physical, emotional, social, political, and economic) environmental ecosystems driving the non-communicable disease (NCD) crisis in the first place. This requires an integrated, cross-sectoral vision that spans the interwoven connections affecting health across the scales of people, places, and planet. This wider “exposome” perspective considers biopsychosocial factors that promote resilience and reduce vulnerabilities of individuals and communities over time—the many variables driving health disparities. Since life course health is strongly determined by early life environments, early interventions should be prioritized as a matter of effectiveness and social justice. Here, we explore the origins of the Advanced Research Project Agency and point to its potential to build integrated solutions, with wisdom and ethical value systems as a compass. Since the planned ARPA-H is anticipated to spawn international collaborations, the imagined concept is of relevance to a broad audience of researchers. With appropriate input, the quest for health equity through personalized, precision medicine while deconstructing unacceptable structural inequities may be accelerated.”

- **Potter, T. (2021) *Planetary Health: An Essential Framework for Nursing Education and Practice. Creative Nursing*, 27(4), 226-230.** Abstract- “Traditionally, we would have considered biodiversity loss, increasing severity and frequency of natural disasters, more frequent infectious disease outbreaks, and increased human migration around the world as disparate issues requiring unique solutions. We are now realizing that the health of humans and the health of the planet are interconnected, and that the Earth's natural systems that support life are in critical jeopardy. Planetary health needs to be a core component of nursing education and practice. Several conditions make this the perfect time for transformative change. The COVID-19 pandemic revealed the deep connection between the human health and the health of the planet and illuminated the need for global solutions that are both sustainable and equitable. The Future of Nursing 2020 – 2030: Charting a Path to Achieve Health Equity report acknowledged the urgent need to address climate

change. The new American Association of Colleges of Nursing essentials for nursing education supports transformation of nursing curricula. Finally, the recent publication of a global transdisciplinary framework for planetary health education offers nursing a blueprint for education and practice.”

- **Walz, D. (2021). Helping Mother Earth. *Nephrology Nursing Journal*. 48(5). Available at: <https://www.proquest.com/docview/2596629772?accountid=26447&parentSessionId=Gojcr%2BIUIDLRCiMVMVwyzHZUxgHWkcezgMzkflgi%2FvE%3D&pq-origsite=summon> Abstract- “Much like the science of the COVID-19 vaccination, “the science is unequivocal; a global increase of 1.5 degrees Celsius above the preindustrial average and the continued loss of biodiversity risk catastrophic harm to health that will be impossible to reverse” (Atwoli et al., 2021, p. 939). Nurses and midwives have a key role to play in saving the planet through exercising our power as individual and collective consumers and, importantly, using our influence as the largest group of healthcare professionals to put pressure on governments and global political and economic actors to change. Call for emergency action to limit global temperature increases, restore biodiversity and protect health.”**

### **The importance of green spaces for health and wellbeing**

The environments we live and work with can have a massive impact on our health and wellness. From air quality to cognitive development, research shows that green is the way to go!

- **Devereux, E. (2023) Nurse-led plant initiative improving staff wellbeing. *Nursing Times*. 119(4), 8-9. Available at: <https://oce-ovid-com.rcn.idm.oclc.org/article/00006203-202304000-00004/HTML> Extract- “Hundreds of nurses queued up at the entrance of Torbay Hospital in Devon on a cold winter morning on 12 December 2022. Despite working at the height of the winter crisis in the NHS, and with strike action looming around the corner, staff members in the queue were smiling. Nurses and their colleagues from other professions were waiting patiently to be given a potted plant, which they were eager to take back to their non-clinical spaces to look after.**

Throughout the week, staff at Torbay and South Devon NHS Foundation Trust continued to be gifted plants, all thanks to nurse Nina Henton-Waller's wellbeing scheme - the Green Plant Project. Ms Henton-Waller, a sister on the acute medicine unit at Torbay Hospital, told *Nursing Times* that it was “an honour” to hand plants out to her colleagues. “It was such a privilege to stand there and give plants to people, because they were just so, so happy,” she said.

Ms Henton-Waller came up with the idea for the Green Plant Project during the first wave of the Covid-19 pandemic, after she began to collect plants with her wife. After realising the joy that looking after plants at home had brought the pair during the pandemic, Ms Henton-Waller had “a lightbulb moment” when she realised the positive impact greener spaces could have on NHS staff at work.”

*Note- a Nursing Times article about a staff well-being project that involved nursing staff at Torbay Hospital receiving plants to care for in non-clinical spaces (offices, reception etc).*

- **Middleton, R., Astell-Burt, T. (2023) Nurses and nature; does green space make a difference? *Journal of Clinical Nursing*. Available at: <https://onlinelibrary-wiley-com.rcn.idm.oclc.org/doi/full/10.1111/jocn.16697> Abstract- “How we engage in and with nature is of growing interest in relation to our health and well-being. For nurses with stressful workloads that are contributing to fatigue, psychological burden, insomnia, and decreased coping strategies, interactions with nature or green space are essential as it has been demonstrated to facilitate better environments and outcomes for nurses. Evidence of the impact of nature is limited. However, the value of interactions with nature has been prioritised by the World Health Organization**



and so healthcare organizations should be considering overt and practical ways to ensure nurses, and other healthcare providers, are exposed to nature to contribute towards healthier environments.”

- **Misako, N., Liehr, P. (2021) Urban children’s well-being factors and qualities of *Being and Doing* in natural space: Nature immersion. *Journal of Holistic Nursing*. 39(2), 174-184. Available at: <https://www.proquest.com/docview/2536358246?accountid=26447&parentSessionId=R1ihDaY491d4Wg9DoFrmlUaqGoTFUJMCVKRxnjWzbU%3D&pq-origsite=summon>**  
**Abstract-** “Research has suggested positive effects of nature immersion—a state of being or an act of doing in natural space—for urban children who were otherwise at risk for emotional or behavioral problems. However, few studies have systematically investigated natural space qualities that predict child well-being at the clinical level. The purpose of this study was to increase the understanding of natural space qualities as factors of urban child well-being. Explanatory mixed methods were used. Quantitative data (N = 174) included a survey and two parental reports of child well-being. Interviews provided qualitative data (N = 15). Data were analyzed using generalized linear model and content analysis. Both data streams were merged into a point of meta-inference that contributed to parental assessment of enhanced child well-being: More frequent nature–child space-time immersion combined with parental valuing of nature connection ( $p < .001$ ) as a soothing and safe resource. The factors of urban nature immersion affected child well-being over parental socioeconomic affluence alone. The evidence corresponds to Nightingale’s tenet that an act of doing, which is considered an action of the child’s own will, affects one’s sense of well-being. The findings indicate that nature immersion can be applied to urban child self-care and holistic nursing modalities.”
  
- **Saenen, N.D. et al. (2023) ‘Residential green space improves cognitive performances in primary schoolchildren independent of traffic-related air pollution exposure’, *Environmental health*, 22(1), pp. 33–33. doi:10.1186/s12940-023-00982-z.**  
**Abstract –** “Cognitive performances of schoolchildren have been adversely associated with both recent and chronic exposure to ambient air pollution at the residence. In addition, growing evidence indicates that exposure to green space is associated with a wide range of health benefits. Therefore, we aimed to investigate if surrounding green space at the residence improves cognitive performance of primary schoolchildren while taking into account air pollution exposure.”
  
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**Abstract-** “The premenstrual syndrome (PMS) causes clinically relevant psychological and physical symptoms in up to 20% of women of reproductive age. To date, no studies have investigated the relationship between PMS and residential surrounding greenspace, although a green living environment has been reported to have beneficial associations with overall and reproductive health.”