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COVID-19

1. **The intersection of climate change with the era of COVID-19.** Zang SM, Benjenk I, Breakey S, Pusey-Reid E, Nicholas PK. Public Health Nurs. 2021 Jan 31. doi: 10.1111/phn.12866. Online ahead of print.

<https://onlinelibrary.wiley.com/doi/10.1111/phn.12866>

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.

2. **The promise of curriculum in the post-Covid world: Eclecticism, deliberation, and a return to the practical and the prophetic.** Burns JP, Cruz C. *Prospects* (Paris). 2021 Jan 26:1-13. doi: 10.1007/s11125-020-09539-1. Online ahead of print.

<https://link.springer.com/article/10.1007/s11125-020-09539-1>

This article focuses on the possibilities through which curriculum on the other side of the Covid-19 pandemic might contribute more proactively to future social and political crises that are multifarious yet interconnected in nature. The Covid-19 pandemic is a global crisis that touches every aspect of social life, including politics, the economy, healthcare systems, poverty, forced human migration, climate change, and importantly, education. To potentially address future crises through curriculum, the article first problematizes the present in education and society-specifically, the 50-year neoliberal project that has transformed society and education. It connects the crisis in education to a transformed social, political, and economic system that has introduced what Gordon Lafer has called a revolution of falling expectations through a hollowing-out of public institutions. The article then returns to the crisis of curriculum, contextualized in Joseph Schwab's *The Practical: A Language for Curriculum*, which presaged the reconceptualization of the curriculum field. It dialogues with Schwab's advocacy for an eclectic, deliberative, and practical curricular ethic as a form of post-reconceptualization curriculum study to contribute to understanding and managing future disruptions, such as those inevitably associated with the climate crisis. Finally, the article connects to the concept of liquidity in curriculum, through which to embody curricular eclecticism and provoke teachers and students to author a vision for a more just future that will not reinscribe the pathologies of the past.

3. **Air quality and health impacts in the Eastern Mediterranean Region: an eye on COVID-19.** Malkawi M, Al-Yousfi B, Mandil A. *East Mediterr Health J*. 2021 Jan 23;27(1):3-4. doi: 10.26719/2021.27.1.3.

<https://applications.emro.who.int/emhj/v27/01/1020-3397-2021-2701-3-4-eng.pdf>

Air quality is intimately linked to human activities, climate, atmosphere and ecosystems. Many of the anthropogenic contributors to air pollution are also sources of greenhouse gases including CO₂ and other short-lived climate pollutants, such as Ozone and black carbon, which greatly contribute to the climate change phenomenon and its adverse effects on human health. Unfortunately, fragile and dry ecosystems prevailing in most of our countries in the Eastern Mediterranean Region may be implicated for exacerbation of this air pollution and climate change dilemma even more severely.

4. **Climate risk, culture and the Covid-19 mortality: A cross-country analysis.** Ozkan A, Ozkan G, Yalaman A, Yildiz Y. *World Dev*. 2021 May;141:105412. doi: 10.1016/j.worlddev.2021.105412. Epub 2021 Jan 19.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7817474/>

Why have some countries done significantly better than others in fighting the Covid-19 pandemic? Had some countries been better prepared than others? This paper attempts to shed light on these questions by examining the role of climate risk and culture in explaining the cross-country variation in the Covid-19 mortality, while controlling for other potential drivers.

In our analysis, we consider climate risk, readiness to climate change and individualism as main indicators reflecting the climate and culture status of individual countries. Using data from 110 countries, we find that the greater the climate risk; the lower the readiness to climate change and the more individualistic the society, the higher the pandemic mortality rate. We also present a series of sensitivity checks and show that our findings are robust to different specifications, alternative definitions of the mortality rate; and different estimation methods. One policy implication arising from our results is that countries that were better prepared for the climate emergency were also better placed to fight the pandemic. Overall, countries in which individuals look after each other and the environment, creating sustainable societies, are better able to cope with climate and public health emergencies.

5. **Technological review on thermochemical conversion of COVID-19-related medical wastes.**

Purnomo CW, Kurniawan W, Aziz M. *Resour Conserv Recycl.* 2021 Apr;167:105429. doi: 10.1016/j.resconrec.2021.105429. Epub 2021 Jan 15.

<https://www.sciencedirect.com/science/article/pii/S0921344921000367>

COVID-19 pandemic has brought tremendous environmental burden due to huge amount of medical wastes (about 54,000 t/d as of November 22, 2020), including face mask, gloves, clothes, goggles, and sanitizer/disinfectant containers. A proper waste management is urgently required to mitigate the spread of the disease, minimize the environmental impacts, and take their potential advantages for further utilization. This work provides a prospective review on the possible thermochemical treatments for those COVID-19 related medical wastes (CMW), as well as their possible conversion to fuels. The characteristics of each waste are initially analyzed and described, especially their potential as energy source. It is clear that most of CMWs are dominated by plastic polymers. Thermochemical processes, including incineration, torrefaction, pyrolysis, and gasification, are reviewed in terms of applicability for CMW. In addition, the mechanical treatment of CMW into sanitized refuse-derived fuel (SRDF) is also discussed as the preliminary stage before thermochemical conversion. In terms of material flexibility, incineration is practically applicable for all types of CMW, although it has the highest potential to emit the largest amount of CO₂ and other harmful gasses. Furthermore, gasification and pyrolysis are considered promising in terms of energy conversion efficiency and environmental impacts. On the other hand, carbonization faces several technical problems following thermal degradation due to insufficient operating temperature.

6. **Waste respirator processing system for public health protection and climate change mitigation under COVID-19 pandemic: Novel process design and energy, environmental, and techno-economic perspectives.**

Zhao X, You F. *Appl Energy.* 2021 Feb 1;283:116129. doi: 10.1016/j.apenergy.2020.116129. Epub 2020 Dec 5.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7834346/>

The ongoing COVID-19 pandemic leads to a surge on consumption of respirators. This study proposes a novel and effective waste respirator processing system for protecting public health and mitigating climate change. Respirator sterilization and pre-processing technologies are included in the system to resist viral infection and facilitate unit processes for respirator pyrolysis, product separation, and downstream processing for greenhouse gas (GHG) emission reduction. We evaluate the system's environmental performance through high-fidelity process

simulations and detailed life cycle assessment. Techno-economic analysis results show that the payback time of the waste respirator processing system is seven years with an internal rate of return of 21.5%. The tipping fee and discount rate are the most influential economic factors. Moreover, the unit life cycle GHG emissions from the waste respirator processing system are 12.93 kg CO₂-eq per thousand waste respirators treated, which reduces GHG emissions by 59.08% compared to incineration-based system so as to mitigate climate change.

Health Impacts of Climate Change

7. **Millions face potential health risks from climate change in UK, report warns.** Iacobucci G. BMJ. 2021 Feb 4;372:n342. doi: 10.1136/bmj.n342.
<https://www.bmj.com/content/372/bmj.n342>
Almost a third of people report suffering from post-traumatic stress disorder (PTSD) after having their house flooded, highlighting the potential health risks from climate change for millions of UK residents, a new report¹ has warned.
In a joint report published on 5 February, the Climate Coalition and the Priestley International Centre for Climate estimate that more than 12 million people in the UK are vulnerable to adverse health because of events made more likely by climate change such as heatwaves and major flooding.
8. **Emerging infectious disease: an underappreciated area of strategic concern for food security.** Brooks DR, Hoberg EP, Boeger WA, Trivellone V. Transbound Emerg Dis. 2021 Feb 1. doi: 10.1111/tbed.14009. Online ahead of print.
<https://onlinelibrary.wiley.com/doi/10.1111/tbed.14009>
Emerging infectious diseases (EID) increasingly threaten global food security and public health. Despite technological breakthroughs, we are losing the battle with (re)emerging diseases as treatment costs and production losses rise. A horizon scan of diseases of crops, livestock, seafood and food-borne illness suggests these costs are unsustainable. The paradigm of coevolution between pathogens and particular hosts teaches that emerging diseases occur only when pathogens evolve specific capacities that allow them to move to new hosts. EID ought to be rare and unpredictable, so crisis response is the best we can do. Alternatively, the Stockholm Paradigm suggests that the world is full of susceptible but unexposed hosts that pathogens could infect, given the opportunity. Global climate change, globalized trade and travel, urbanization, and land use changes (often associated with biodiversity loss) increase those opportunities, making EID frequent. We can, however, anticipate their arrival in new locations and their behavior once they have arrived. We can "find them before they find us," mitigating their impacts. The DAMA (Document, Assess, Monitor, Act) protocol alters the current reactive stance and embodies proactive solutions to anticipate and mitigate the impacts of EID, extending human and material resources and buying time for development of new vaccinations, medications, and control measures.
9. **The potential effects of climate change on the prevalence of gestational diabetes are less apparent with different diagnostic criteria.** Van Gemert TE, Moses RG, Lambert K. Aust N Z J Obstet Gynaecol. 2021 Feb 1. doi: 10.1111/ajo.13239. Online ahead of print.

<https://obgyn.onlinelibrary.wiley.com/doi/10.1111/ajo.13239>

A recent publication in the ANZJOG¹ suggested a possible link between climate change and an increasing prevalence of gestational diabetes mellitus (GDM). The current Australasian Diabetes in Pregnancy Society (ADIPS) for the diagnosis of GDM² stem from the results of the Hyperglycaemia and Adverse Pregnancy Outcomes (HAPO) study³ which demonstrated a continuum of risk between elevated glucose levels and a range of adverse fetal outcomes. Diagnostic glucose criteria following an oral glucose tolerance test (GTT) were based on an odds ratio (OR) of 1.75 for these selected fetal outcomes. The current ADIPS criteria have led to a marked increase in the prevalence of GDM^{4, 5} compared with the previous criteria.⁶ However, the new criteria have not been universally adopted in Australia with the Royal Australian College of General Practitioners providing an option to remain with the previous ADIPS criteria. Other countries, eg Canada have used the science of the HAPO results but have elected to use criteria based on an OR of 2.0.

10. **Lumpy skin disease, an emerging transboundary viral disease: A review.** Namazi F, Khodakaram Tafti A. *Vet Med Sci.* 2021 Feb 1. doi: 10.1002/vms3.434. Online ahead of print. <https://onlinelibrary.wiley.com/doi/full/10.1002/vms3.434>

Lumpy skin disease is an emerging bovine viral disease, which is endemic in most African countries and some Middle East ones, and the elevated risk of the spread of disease into the rest of Asia and Europe should be considered. The recent rapid spread of disease in currently disease-free countries indicates the importance of understanding the limitations and routes of distribution. The causative agent, Capripoxvirus, can also induce sheeppox and goatpox. The economic significance of these diseases is of great concern, given that they threaten international trade and could be used as economic bioterrorism agents. The distribution of capripoxviruses seems to be expanding due to limited access to effective vaccines and poverty within farming communities. This is largely due to the economic effects of the Covid-19 pandemic and the imposition of crippling sanctions in endemic regions, as well as an increase in the legal and illegal trade of live animals and animal products, and also global climate change. The present review is designed to provide existing information on the various aspects of the disease such as its clinicopathology, transmission, epidemiology, diagnosis, prevention and control measures, and the potential role of wildlife in the further spread of disease.

11. **Extreme weather events in Europe and their health consequences - A systematic review.**

Weilhammer V, Schmid J, Mittermeier I, Schreiber F, Jiang L, Pastuhovic V, Herr C, Heinze S. *Int J Hyg Environ Health.* 2021 Jan 30;233:113688. doi: 10.1016/j.ijheh.2021.113688. Online ahead of print.

https://journals.lww.com/environepidem/FullText/2019/10001/Extreme_Weather_Events_in_Europe_and_Their.1319.aspx

BACKGROUND: Due to climate change, the frequency, intensity and severity of extreme weather events, such as heat waves, cold waves, storms, heavy precipitation causing wildfires, floods, and droughts are increasing, which could adversely affect human health. The purpose of this systematic review is therefore to assess the current literature about the association between these extreme weather events and their impact on the health of the European population.

METHODS: Observational studies published from January 1, 2007 to May 17, 2020 on health effects of extreme weather events in Europe were searched systematically in Medline, Embase and Cochrane Central Register of Controlled Trials. The exposures of interest included extreme temperature, heat waves, cold waves, droughts, floods, storms and wildfires. The health impacts included total mortality, cardiovascular mortality and morbidity, respiratory mortality and morbidity, and mental health. We conducted the systematic review following PRISMA (Preferred Reporting Items for Systematic Review and Meta-analysis). The quality of the included studies was assessed using the NICE quality appraisal checklist (National Institute for Health and Care Excellence).

RESULTS: The search yielded 1472 articles, of which 35 met the inclusion criteria and were included in our review. Studies regarding five extreme weather events (extreme heat events, extreme cold events, wildfires, floods, droughts) were found. A positive association between extreme heat/cold events and overall, cardiovascular and respiratory mortality was reported from most studies. Wildfires are likely to increase the overall and cardiovascular mortality. Floods might be associated with the deterioration of mental health instead of mortality. Depending on their length, droughts could have an influence on both respiratory and cardiovascular mortality. Contradictory evidence was found in heat-associated morbidity and wildfire-associated respiratory mortality. The associations are inconclusive due to the heterogeneous study designs, study quality, exposure and outcome assessment.

CONCLUSIONS: Evidence from most of the included studies showed that extreme heat and cold events, droughts, wildfires and floods in Europe have negative impacts on human health including mental health, although some of the associations are not conclusive. Additional high-quality studies are needed to confirm our results and further studies regarding the effects of other extreme weather events in Europe are to be expected.

12. **Climate change & dermatology - a special issue for a special topic.** Rosenbach M, Williams M. *Int J Womens Dermatol.* 2020 Dec 3;7(1):1-2. doi: 10.1016/j.ijwd.2020.12.001. eCollection 2021 Jan.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7838323/pdf/main.pdf>

Many of us may regard climate change in terms of national or international news and politics, rather than as an issue with profound impacts on both human health in general and dermatology in particular—its skin diseases, our patients, and our practices. Indeed, climate change has been declared a human health crisis, both now and for years, decades, and generations to come. Although the human health costs have been well documented in the general medical literature, its dermatologic impacts and implications have received far less attention. This special issue of the *International Journal of Women's Dermatology* is intended to address that deficiency and to bring the issue of climate change into the foreground of our specialty, with the proposition that it is essential for us all to learn about, discuss, and incorporate what we know into our practices and the care of patients with skin disease.

13. **Human Health and Ocean Pollution.** Landrigan PJ, Stegeman JJ, Fleming LE, Allemand D, Anderson DM, Backer LC, Brucker-Davis F, Chevalier N, Corra L, Czerucka D, Bottein MD, Demeneix B, Depledge M, Deheyn DD, Dorman CJ, Fénichel P, Fisher S, Gaill F, Galgani F, Gaze WH, Giuliano L, Grandjean P, Hahn ME, Hamdoun A, Hess P, Judson B, Laborde A, McGrade J,

Mu J, Mustapha A, Neira M, Noble RT, Pedrotti ML, Reddy C, Rocklöv J, Scharler UM, Shanmugam H, Taghian G, van de Water JAJM, Vezzulli L, Weihe P, Zeka A, Raps H, Rampal P. *Ann Glob Health*. 2020 Dec 3;86(1):151. doi: 10.5334/aogh.2831.

<https://annalsofglobalhealth.org/articles/10.5334/aogh.2831/>

ENVIRONMENTAL FINDINGS: Pollution of the oceans is widespread, worsening, and in most countries poorly controlled. It is a complex mixture of toxic metals, plastics, manufactured chemicals, petroleum, urban and industrial wastes, pesticides, fertilizers, pharmaceutical chemicals, agricultural runoff, and sewage. More than 80% arises from land-based sources. It reaches the oceans through rivers, runoff, atmospheric deposition and direct discharges. It is often heaviest near the coasts and most highly concentrated along the coasts of low- and middle-income countries. Plastic is a rapidly increasing and highly visible component of ocean pollution, and an estimated 10 million metric tons of plastic waste enter the seas each year. Mercury is the metal pollutant of greatest concern in the oceans; it is released from two main sources - coal combustion and small-scale gold mining. Global spread of industrialized agriculture with increasing use of chemical fertilizer leads to extension of Harmful Algal Blooms (HABs) to previously unaffected regions. Chemical pollutants are ubiquitous and contaminate seas and marine organisms from the high Arctic to the abyssal depths.

ECOSYSTEM FINDINGS: Ocean pollution has multiple negative impacts on marine ecosystems, and these impacts are exacerbated by global climate change. Petroleum-based pollutants reduce photosynthesis in marine microorganisms that generate oxygen. Increasing absorption of carbon dioxide into the seas causes ocean acidification, which destroys coral reefs, impairs shellfish development, dissolves calcium-containing microorganisms at the base of the marine food web, and increases the toxicity of some pollutants. Plastic pollution threatens marine mammals, fish, and seabirds and accumulates in large mid-ocean gyres. It breaks down into microplastic and nanoplastic particles containing multiple manufactured chemicals that can enter the tissues of marine organisms, including species consumed by humans. Industrial releases, runoff, and sewage increase frequency and severity of HABs, bacterial pollution, and anti-microbial resistance. Pollution and sea surface warming are triggering poleward migration of dangerous pathogens such as the *Vibrio* species. Industrial discharges, pharmaceutical wastes, pesticides, and sewage contribute to global declines in fish stocks.

HUMAN HEALTH FINDINGS: Methylmercury and PCBs are the ocean pollutants whose human health effects are best understood. Exposures of infants in utero to these pollutants through maternal consumption of contaminated seafood can damage developing brains, reduce IQ and increase children's risks for autism, ADHD and learning disorders. Adult exposures to methylmercury increase risks for cardiovascular disease and dementia. Manufactured chemicals - phthalates, bisphenol A, flame retardants, and perfluorinated chemicals, many of them released into the seas from plastic waste - can disrupt endocrine signaling, reduce male fertility, damage the nervous system, and increase risk of cancer. HABs produce potent toxins that accumulate in fish and shellfish. When ingested, these toxins can cause severe neurological impairment and rapid death. HAB toxins can also become airborne and cause respiratory disease. Pathogenic marine bacteria cause gastrointestinal diseases and deep wound infections. With climate change and increasing pollution, risk is high that *Vibrio* infections, including cholera, will increase in frequency and extend to new areas. All of the health impacts of ocean

pollution fall disproportionately on vulnerable populations in the Global South - environmental injustice on a planetary scale.

CONCLUSIONS: Ocean pollution is a global problem. It arises from multiple sources and crosses national boundaries. It is the consequence of reckless, shortsighted, and unsustainable exploitation of the earth's resources. It endangers marine ecosystems. It impedes the production of atmospheric oxygen. Its threats to human health are great and growing, but still incompletely understood. Its economic costs are only beginning to be counted. Ocean pollution can be prevented. Like all forms of pollution, ocean pollution can be controlled by deploying data-driven strategies based on law, policy, technology, and enforcement that target priority pollution sources. Many countries have used these tools to control air and water pollution and are now applying them to ocean pollution. Successes achieved to date demonstrate that broader control is feasible. Heavily polluted harbors have been cleaned, estuaries rejuvenated, and coral reefs restored. Prevention of ocean pollution creates many benefits. It boosts economies, increases tourism, helps restore fisheries, and improves human health and well-being. It advances the Sustainable Development Goals (SDG). These benefits will last for centuries.

RECOMMENDATIONS: World leaders who recognize the gravity of ocean pollution, acknowledge its growing dangers, engage civil society and the global public, and take bold, evidence-based action to stop pollution at source will be critical to preventing ocean pollution and safeguarding human health. Prevention of pollution from land-based sources is key. Eliminating coal combustion and banning all uses of mercury will reduce mercury pollution. Bans on single-use plastic and better management of plastic waste reduce plastic pollution. Bans on persistent organic pollutants (POPs) have reduced pollution by PCBs and DDT. Control of industrial discharges, treatment of sewage, and reduced applications of fertilizers have mitigated coastal pollution and are reducing frequency of HABs. National, regional and international marine pollution control programs that are adequately funded and backed by strong enforcement have been shown to be effective. Robust monitoring is essential to track progress. Further interventions that hold great promise include wide-scale transition to renewable fuels; transition to a circular economy that creates little waste and focuses on equity rather than on endless growth; embracing the principles of green chemistry; and building scientific capacity in all countries. Designation of Marine Protected Areas (MPAs) will safeguard critical ecosystems, protect vulnerable fish stocks, and enhance human health and well-being. Creation of MPAs is an important manifestation of national and international commitment to protecting the health of the seas.

14. Anthropocene-related disease: The inevitable outcome of progressive niche modification?

Gluckman PD, Low FM, Hanson MA. *Evol Med Public Health*. 2020 Nov 10;2020(1):304-310. doi: 10.1093/emph/eoaa042. eCollection 2020.

<https://academic.oup.com/emph/article/2020/1/304/5970475>

While the Anthropocene is often discussed in terms of the health of the planet, there has been less attention paid to its impact on the health of humans. We argue that there is now sufficient evidence of broad and growing adverse effects on human health to consider Anthropocene-related diseases and their impact on public health as a category of conditions needing specific recognition and preventative action. Using the examples of climate change-related health

challenges, non-communicable disease, antimicrobial resistance and the unique challenges of the digital environment, we discuss how the profound and pervasive environmental changes of the Anthropocene can affect our health, with broad effects on societal health. We frame this concept in terms of human evolutionary history and cultural evolution's runaway characteristics, reflecting our drive for continual and cumulative innovation for reasons beyond simply survival and Darwinian fitness. As the causative agents are often remote from those populations most adversely affected, prevention and mitigation require collective societal and policy actions. Lay summary: There is increasing evidence that our uniquely evolved ability to modify our environments rapidly and at an accelerating pace is having impacts on our health, particularly non-communicable diseases and poor mental wellbeing. Reframing these public health challenges as Anthropocene-related diseases emphasizes the need for collective responsibility and systems approaches to prevention.

15. **Mass migration and climate change: Dermatologic manifestations.** Kwak R, Kamal K, Charrow A, Khalifian S. *Int J Womens Dermatol.* 2020 Aug 20;7(1):98-106. doi: 10.1016/j.ijwd.2020.07.014. eCollection 2021 Jan.

<https://www.sciencedirect.com/science/article/pii/S2352647520301283>

Major changes in climate resulting in mass migrations have unique dermatologic implications for global vulnerable populations. Dermatologic manifestations commonly accompany the infectious and communicable diseases that proliferate in the settings of confinement, crowding, and limited sanitation associated with mass migration. Ectoparasitic infestations abound in refugee camps, and poor nutrition, hygiene, and compromised immunity put refugees at an increased risk for more dangerous infectious diseases carried by these ectoparasites. Climate change also profoundly affects the worldwide distribution of various vector-borne illnesses, thereby leading to the emergence of various communicable diseases in previously nonendemic areas. Natural disasters not only disrupt important lifesaving treatments, but also challenge various infectious disease control measures that are critical in preventing rapid transmission of highly infectious diseases. This article reviews the infectious diseases commonly found in these scenarios and provides an in-depth discussion of important implications for the dermatologist.

16. **Climate change and pediatric skin health.** Schachtel A, Dyer JA, Boos MD. *Int J Womens Dermatol.* 2020 Jul 24;7(1):85-90. doi: 10.1016/j.ijwd.2020.07.006. eCollection 2021 Jan.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7838241/>

Children are known to disproportionately bear the health impacts of climate change, particularly children living in impoverished areas. Owing to their developing physiology and immature metabolism, distinct exposure behaviors, and reliance on adults for care and protection, children are uniquely susceptible to the adverse effects of our warming planet. Herein, we summarize the known impacts of climate change on pediatric skin health, including its effects on atopic dermatitis, vector-borne and other infectious diseases, nutritional deficiencies, and psychodermatoses.

17. **The influence of climate change on skin cancer incidence - A review of the evidence.** Parker ER. *Int J Womens Dermatol.* 2020 Jul 17;7(1):17-27. doi: 10.1016/j.ijwd.2020.07.003. eCollection 2021 Jan.

<https://www.sciencedirect.com/science/article/pii/S2352647520301155>

BACKGROUND: Climate change is broadly affecting human health, with grave concern that continued warming of the earth's atmosphere will result in serious harm. Since the mid-20th century, skin cancer incidence rates have risen at an alarming rate worldwide.

OBJECTIVE: This review examines the relationship between climate change and cutaneous carcinogenesis.

METHODS: A literature review used the National Institutes of Health databases (PubMed and Medline), the Surveillance, Epidemiology, and End Results and International Agency for Research on Cancer registries, and published reports by federal and international agencies and consortia, including the Australian Institute of Health and Welfare, Climate and Clean Air Coalition, U.S. Environmental Protection Agency, Intergovernmental Panel on Climate Change, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, United Nations Environment Programme, World Health Organization, and World Meteorological Organization.

RESULTS: Skin cancer risk is determined by multiple factors, with exposure to ultraviolet radiation being the most important. Strong circumstantial evidence supports the hypothesis that factors related to climate change, including stratospheric ozone depletion, global warming, and ambient air pollution, have likely contributed to the increasing incidence of cutaneous malignancy globally and will continue to impose a negative influence on skin cancer incidence for many decades to come.

CONCLUSION: Because much of the data are based on animal studies and computer simulations, establishing a direct and definitive link remains challenging. More epidemiologic studies are needed to prove causality in skin cancer, but the evidence for overall harm to human health as a direct result of climate change is clear. Global action to mitigate these negative impacts to humans and the environment is imperative.

WE ACT

18. **Multiple Climate Tipping Points Metrics for Improved Sustainability Assessment of Products and Services.** Fabbri S, Hauschild MZ, Lenton TM, Owsianiak M. *Environ Sci Technol.* 2021 Feb 5. doi: 10.1021/acs.est.0c02928. Online ahead of print.

<https://pubs.acs.org/doi/10.1021/acs.est.0c02928>

Mounting evidence indicates that climate tipping points can have large, potentially irreversible, impacts on the earth system and human societies. Yet, climate change metrics applied in current sustainability assessment methods generally do not consider these tipping points, with the use of arbitrarily determined time horizons and assumptions that the climate impact of a product or service is independent of emission timing. Here, we propose a new method for calculating climate tipping characterization factors for greenhouse gases (carbon dioxide, methane, and nitrous oxide) at midpoint. It covers 13 projected tipping points, incorporates the effect that the crossing of a given tipping point has on accelerating the crossing of other tipping points, and addresses uncertainties in the temperature thresholds that trigger the tipping points. To demonstrate the added value of the new metric, we apply it to emissions stemming from end-of-life of plastic polymers and compare them with commonly used metrics. This

highlights the need to consider climate tipping in sustainability assessment of products and services.

19. **Cancer and climate change: the environmental impact of cancer care.** Briggs S, Cavet J, Lamb C, Lightowers S. *Lancet Oncol.* 2021 Feb;22(2):e38. doi: 10.1016/S1470-2045(20)30740-3.

Comment in

Lancet Oncol. 2021 Feb;22(2):e39.

Comment on

Lancet Oncol. 2020 Nov;21(11):e519-e527.

<https://www.clinicalkey.com/#!/content/journal/1-s2.0-S1470204520307403>

We were delighted to read Robert Hiatt and Naomi Beyeler's Review 1 of climate change and cancer, in which they highlight the impact of climate breakdown on cancer epidemiology and care. However, the environmental impact of the cancer care we deliver, an essential facet of this discussion, was not covered.

The health-care industry is a major emitter of greenhouse gasses, representing 10% of total emissions in the USA, 2 and 4% of carbon emissions in the UK. 3 In the NHS, the manufacture and supply of pharmaceuticals and medical devices causes 30% of these emissions; patient travel represents 5%. 3 Although the carbon footprint of cancer care has not been quantified, the focus on chemotherapies and radiotherapies and the frequency of patients' hospital attendance make cancer care likely to be a significant contributor.

20. **Cancer and climate change: the environmental impact of cancer care - Authors' reply.** Hiatt RA, Beyeler N. *Lancet Oncol.* 2021 Feb;22(2):e39. doi: 10.1016/S1470-2045(21)00020-6.

Comment on

Lancet Oncol. 2020 Nov;21(11):e519-e527.

Lancet Oncol. 2021 Feb;22(2):e38.

<https://www.clinicalkey.com/#!/content/journal/1-s2.0-S1470204521000206>

We wish to thank Sarah Briggs and colleagues for pointing out the contribution that health care and, particularly, cancer care can add to greenhouse gas emissions. Our Review focused on the effects of climate change on cancer, including on the cancer health-care system itself. 1 But when it comes to what health-care and science professionals can do about it, the causal arrow can be turned in the opposite direction, to consider the mitigation of our current activities in adding to the carbon footprint of human activity, as recently documented by Nogueira et al; 2 these include on-site energy expenditures, pharmaceutical production, inefficient medical devices, food delivery and waste, transportation, and supply chain greenhouse gas emissions. We concluded with a section on potential responses and opportunities for intervention. We can add the actions that could be taken by health-care professionals and institutions, which have been nicely outlined by Briggs and colleagues. In addition, it is worth noting that we mentioned the effect of the COVID-19 pandemic on the environment, but with the magnitude of the pandemic and its relation to health care now fully recognised, 3 we can add the opportunity to build back from this onslaught with health-care practices that act to reduce, not contribute to, further greenhouse gas emissions.

21. **Employee green behaviour: How organizations can help the environment.** Unsworth KL, Davis MC, Russell SV, Bretter C. *Curr Opin Psychol.* 2020 Dec 24;42:1-6. doi: 10.1016/j.copsyc.2020.12.006. Online ahead of print.

<https://www.sciencedirect.com/science/article/pii/S2352250X20302165>

Organizations are intrinsically involved in climate change - both in its causes and its solutions - and there has been a growing interest in the microfactors and macrofactors that affect employee green behaviour. On an employee level, the literature stresses the importance of values and self-concordance. On an organizational level, in contrast, recent developments emphasize environmental dynamic capabilities, leadership and human resource management practices such as training. However, an interplay between such microfactors and macrofactors suggests that organizational initiatives do not work uniformly but depend on employees' environmentalism. We thus highlight the need for a dynamic systems perspective in researching all types of employee green behaviour in organizations.

22. **How to Effectively Encourage Sustainable Food Choices: A Mini-Review of Available Evidence.** Abrahamse W. *Front Psychol.* 2020 Nov 16;11:589674. doi: 10.3389/fpsyg.2020.589674. eCollection 2020.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2020.589674/full>

Food choices are difficult to change. People's individual motivations (such as taste, cost, and food preferences) can be at odds with the negative environmental outcomes of their food choices (such as deforestation, water pollution, and climate change). How then can people be encouraged to adopt more sustainable food choices? This rapid review uses a dual-processing framework of decision-making to structure an investigation of the effectiveness of interventions to encourage sustainable food choices (e.g., local and organic food consumption, reducing meat and dairy intake, reducing food waste) via voluntary behavior change. The review includes interventions that rely on fast, automatic decision-making processes (e.g., nudging) and interventions that rely on more deliberate decision-making (e.g., information provision). These interventions have varying degrees of success in terms of encouraging sustainable food choices. This mini-review outlines some of the ways in which our understanding of sustainable food choices could be enhanced. This includes a call for the inclusion of possible moderators and mediators (past behavior, attitudes, beliefs, values) as part of effect measurements, because these elucidate the mechanisms by which behavior change occurs. In light of the climate change challenge, studies that include long-term effect measurements are essential as these can provide insight on how to foster sustained and durable changes.

23. **Qualitative research study on addressing barriers to healthy diet among low-income individuals at an urban, safety-net hospital.** Cahill E, Schmidt SR, Henry TL, Kumar G, Berney S, Bussey-Jones J, Girard AW. *BMJ Nutr Prev Health.* 2020 Sep 9;3(2):383-386. doi: 10.1136/bmjnph-2020-000064. eCollection 2020 Dec.

<https://nutrition.bmj.com/content/early/2020/09/07/bmjnph-2020-000064>

BACKGROUND: Some American households experience food insecurity, where access to adequate food is limited by lack of money and other resources. As such, we implemented a free 6-month Fruit and Vegetable Prescription Program within a large urban safety-net hospital.

METHODS: 32 participants completed a baseline and postintervention qualitative evaluation about food-related behaviour 6 months after study completion. Deductive codes were developed based on the key topics addressed in the interviews; inductive codes were identified from analytically reading the transcripts. Transcripts were coded in MAXQDA V.12 (Release 12.3.2).

RESULTS: The information collected in the qualitative interviews highlights the many factors that affect dietary habits, including the environmental and individual influences that play a role in food choices people make. Participants expressed very positive sentiments overall about their programme participation.

CONCLUSIONS: A multifaceted intervention that targets individual behaviour change, enhances nutritional knowledge and skills, and reduces socioeconomic barriers to accessing fresh produce may enhance participant knowledge and self-efficacy around healthy eating. However, socioeconomic factors remain as continual barriers to sustaining healthy eating over the long term. Ongoing efforts that address social determinants of health may be necessary to promote sustainability of behaviour change.

24. **Combating climate change in the clinic: Cost-effective strategies to decrease the carbon footprint of outpatient dermatologic practice.** Fathy R, Nelson CA, Barbieri JS. *Int J Womens Dermatol.* 2020 Jul 8;7(1):107-111. doi: 10.1016/j.ijwd.2020.05.015. eCollection 2021 Jan.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7838240/>

There have been numerous studies highlighting the negative impact that climate change has already had and is expected to continue to have on patients and their health. Notably, the health care industry has been identified as a major contributor to the global carbon footprint, highlighting a major opportunity for practitioners to intervene. However, the large majority of the literature on strategies to reduce health care's contribution to climate change focuses solely on the inpatient setting. We review a variety of strategies for clinicians in the outpatient setting to adjust their practices to combat climate change. Summarizing the best evidence from other industries and translating recommendations from the literature on inpatient practice, we identify a wide range of opportunities for intervention, many of which are easy to implement and cost-effective. These general strategies to reduce both the carbon footprint and monthly operating costs of an outpatient clinic should be of interest to any practicing physician, both dermatologists and nondermatologists.

25. **Greening the office: Saving resources, saving money, and educating our patients.** Blum S, Buckland M, Sack TL, Fivenson D. *Int J Womens Dermatol.* 2020 Jul 4;7(1):112-116. doi: 10.1016/j.ijwd.2020.04.013. eCollection 2021 Jan.

<https://europepmc.org/article/med/33537401>

OBJECTIVE: Dermatologists can benefit from adopting environmental sustainability in the management of their practices. We can also use opportunities to share best practices in environmental stewardship concepts with our colleagues, patients, and communities. Herein, we review easy steps for any health care professional, and dermatologists in particular, to adopt environmental sustainability and become more active in the fight against climate change.

METHODS: This study included a select literature review, an identification of resources, and an overview of MyGreenDoctor.org.

RESULTS: Many simple, cost effective, energy saving resources were identified. A reference list of climate change resources for health are organizations to help with lower their carbon footprints, educating their staff and patients, and advocacy for better environmental stewardship is presented.

CONCLUSION: Going green is an easy process that can save money, boost morale, and help educate patients while reducing the carbon footprint of any size medical practice.

26. **Is global dietary change an effective strategy to curb climate change?** Bradfield J, Trigueiro H, Ray S. *BMJ Nutr Prev Health*. 2020 Jul 2;3(2):121-122. doi: 10.1136/bmjnph-2020-000101. eCollection 2020 Dec.

<https://nutrition.bmj.com/content/bmjnph/early/2020/07/02/bmjnph-2020-000101.full.pdf>

Since the dawn of agriculture, humankind has constantly strived to improve food availability and food systems. The agricultural revolution which began in the mid-17th century and continued well into the 19th century accelerated this improvement and contributed to a growth in population and improvement in health. Since then the population has continued to rise and with it, the consequent environmental complications.

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