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COVID-19

1. **COVID-19 pandemic: What can we learn for better air quality and human health?** Ravindra K, Singh T, Vardhan S, Shrivastava A, Singh S, Kumar P, Mor S. J Infect Public Health. 2022 Feb;15(2):187-198. doi: 10.1016/j.jiph.2021.12.001. Epub 2021 Dec 4. https://www.sciencedirect.com/science/article/pii/S1876034121004019
   The COVID-19 lockdown resulted in improved air quality in many cities across the world. With the objective of what could be the new learning from the COVID-19 pandemic and subsequent lockdowns for better air quality and human health, a critical synthesis of the available evidence concerning air pollution reduction, the population at risk and natural versus anthropogenic emissions was conducted. Can the new societal norms adopted during pandemics, such as the use of face cover, awareness regarding respiratory hand hygiene, and physical distancing, help in reducing disease burden in the future? The use of masks will be more socially acceptable during the high air pollution episodes in lower and middle-income countries, which could help to reduce air pollution exposure. Although post-pandemic, some air pollution reduction strategies may be affected, such as car-pooling and the use of mass transit systems for commuting to avoid exposure to airborne infections like coronavirus. However, promoting non-motorized modes of transportation such as cycling and walking within cities as currently being enabled in Europe and other countries could overshadow such losses. This demand focus on increasing walkability in a town for all ages and populations, including for a differently-abled community. The study highlighted that for better health and sustainability there. is also a need to promote other measures such as work-from-home, technological infrastructure, the extension of smart cities, and the use of information technology.

2. **COVID-19 lockdown and natural resources: a global assessment on the challenges, opportunities, and the way forward.** Muche M, Yemata G, Molla E, Muasya AM, Tsegay BA. Bull Natl Res Cent. 2022;46(1):20. doi: 10.1186/s42269-022-00706-2. Epub 2022 Jan 29. https://bnrc.springeropen.com/articles/10.1186/s42269-022-00706-2

MAIN BODY: This review showed that the unprecedented pandemic lockdown events brought a negative impact on the physical environment, including pollution associated with a drastic increase in person protective equipment, deforestation, illegal poaching and logging, overfishing, disruption of the conservation program and projects. It is noted that the spread of pandemic diseases could be aggravated by environmental pollution and a rapid increase in the global population. Despite these negative impacts of COVID-19, the anthropause appear to have also several positive effects on natural resources such as short term reduction of indoor and outdoor environmental pollutants (PM2.5, PM10, NO2, SO2, CO, and CO2), reduction in noise pollutions from ships, boats, vehicles, and planes which have positive effects on aquatic ecosystems, water quality, birds behaviour, wildlife biodiversity, and ecosystem restoration. CONCLUSION: Therefore, governments and scientific communities across the globe have called for a green recovery to COVID-19 and implement multi-actor interventions and environmentally friendly technologies to improve and safeguard sustainable environmental and biodiversity management and halt the next pandemic.

3. **Calculating the carbon footprint of a Geriatric Medicine clinic before and after COVID-19.** Bartlett S, Keir S. Age Ageing. 2022 Feb 2;51(2):afab275. doi: 10.1093/ageing/afab275. https://academic.oup.com/ageing/article/51/2/afab275/6520502
METHOD: data from the Greenhouse Gas Protocol, NHS Carbon Footprint Plus and UK Government were used to estimate the carbon emissions per consultation. Values were calculated for virtual and face-to-face contact and applied to actual clinics both before and during the COVID-19 pandemic.
RESULTS: the carbon footprint of a face-to-face clinic consultation is 4.82 kgCO2e, most of which is patient travel, followed by staff travel and use of PPE. The footprint of a virtual consultation is 0.99 kgCO2e, most of which is staff travel, followed by data use.Using our hybrid model for a single session clinic reduced our annual carbon footprint by an estimated 200 kgCO2e, roughly equivalent to a surgical operation.
DISCUSSION: the COVID-19 pandemic has made us deliver services differently. The environmental benefits seen of moving to a partially virtual clinic highlight the importance of thinking beyond reverting to 'business as usual'-instead deliberately retaining changes, which benefit the current and future health of our community.

Health Impacts of Climate Change

4. **Short-term effects and economic burden assessment of ambient air pollution on hospitalizations for schizophrenia.** Ji Y, Liu B, Song J, Pan R, Cheng J, Wang H, Su H. Environ Sci Pollut Res Int. 2022 Feb 11. doi: 10.1007/s11356-022-19026-z. Online ahead of print.
Our results showed that for a 10 μg/m3 increase in the concentrations of PM2.5, PM10, SO2, and CO at lag5, the corresponding relative risks (RRs) were 1.0160 (95% CI: 1.0038-1.0282), 1.0097 (1.0018-1.0177), 1.0738 (1.0222-1.01280), and 1.0013 (1.0001-1.0026), respectively. However, no significant effect of NO2 or O3 on schizophrenia admissions was found. The stratified analysis indicated that females and younger individuals (< 45 years old) appeared to be more vulnerable, but no significant difference was found between seasons. Furthermore, 12.41% of schizophrenia hospitalizations were attributable to exposure to air pollution

exceeding the World Health Organization (WHO) air quality standard, with a total economic burden of 89.67 million RMB during the study period. At the individual level, excessive air pollution exposure resulted in an economic burden of 8232.08 RMB per hospitalization. Our study found that short-term exposure to air pollutants increased the risk of hospital admissions for schizophrenia and resulted in a substantial economic burden. Considerable health benefits can be achieved by further reducing air pollution.

5. **The Impacts of Car-Free Days and Events on the Environment and Human Health.** Glazener A, Wylie J, van Waas W, Khreis H. Curr Environ Health Rep. 2022 Feb 10. doi: 10.1007/s40572-022-00342-y. Online ahead of print.
   RECENT FINDINGS: The impacts of car-free days and events are highly variable and seem to depend on the scope (frequency, duration, and geographic size) and goals of each car-free day and event. Most of the existing literature measures impacts in terms of air and noise pollution and some studies focus on physical activity metrics. In some cases, car-free days and events were successful in reducing the concentration of certain air pollutants but had little or adverse impacts on the concentration of others. Often, traffic is diverted from cordoned areas to surrounding streets, displacing traffic congestion and adverse environmental exposures to other areas of a city, with potential understudied implications to environmental justice. Car-free days and events are often an attractive policy option; however, they require intensive planning to be successful. The organization and execution of car-free days and events, as well as public support and stakeholder engagement, greatly influence the level of success and the sustainability of such initiatives. Health benefits may be a palatable and convincing argument to the general public. However, very few studies focus on actual health impacts associated with car-free days and events. Future research could be most useful if it focused on measuring health outcomes associated with car-free days and events through longitudinal studies.

6. **The role of environmental exposures and gene-environment interactions in the etiology of systemic lupus erythematous.** Woo JMP, Parks CG, Jacobsen S, Costenbader KH, Bernatsky S. J Intern Med. 2022 Feb 10. doi: 10.1111/joim.13448. Online ahead of print.
   https://onlinelibrary.wiley.com/doi/pdf/10.1111/joim.13448
   Systemic lupus erythematosus (SLE) is a complex, chronic autoimmune disease, whose etiology includes both genetic and environmental factors. Individual genetic risk factors likely only account for about one-third of observed heritability among individuals with a family history of SLE. A large portion of the remaining risk may be attributable to environmental exposures and gene-environment interactions. This review focuses on SLE risk associated with environmental factors, ranging from chemical and physical environmental exposures to lifestyle behaviors, with the weight of evidence supporting positive associations between SLE and occupational exposure to crystalline silica, current smoking, and exogenous estrogens (e.g., oral contraceptives and postmenopausal hormones). Other risk factors may include lifestyle behaviors (e.g., dietary intake and sleep) and other exposures (e.g., ultraviolet [UV] radiation, air pollution, solvents, pesticides, vaccines and medications, and infections). Alcohol use may be associated with decreased SLE risk. We also describe the more limited body of knowledge on gene-environment interactions and SLE risk, including IL-10, ESR1, IL-33, ITGAM, and NAT2 and observed interactions with smoking, UV exposure, and alcohol. Understanding genetic and

environmental risk factors for SLE, and how they may interact, can help to elucidate SLE pathogenesis and its clinical heterogeneity. Ultimately, this knowledge may facilitate the development of preventive interventions that address modifiable risk factors in susceptible individuals and vulnerable populations.

7. **Controlled human exposure to diesel exhaust: results illuminate health effects of traffic-related air pollution and inform future directions.** Long E, Carlsten C. Part Fibre Toxicol. 2022 Feb 9;19(1):11. doi: 10.1186/s12989-022-00450-5.
https://particleandfibretoxicology.biomedcentral.com/articles/10.1186/s12989-022-00450-5
Air pollution is an issue of increasing interest due to its globally relevant impacts on morbidity and mortality. Controlled human exposure (CHE) studies are often employed to investigate the impacts of pollution on human health, with diesel exhaust (DE) commonly used as a surrogate of traffic related air pollution (TRAP). This paper will review the results derived from 104 publications of CHE to DE (CHE-DE) with respect to health outcomes. CHE-DE studies have provided mechanistic evidence supporting TRAP's detrimental effects on related to the cardiovascular system (e.g., vasomotor dysfunction, inhibition of fibrinolysis, and impaired cardiac function) and respiratory system (e.g., airway inflammation, increased airway responsiveness, and clinical symptoms of asthma). Oxidative stress is thought to be the primary mechanism of TRAP-induced effects and has been supported by several CHE-DE studies. A historical limitation of some air pollution research is consideration of TRAP (or its components) in isolation, limiting insight into the interactions between TRAP and other environmental factors often encountered in tandem. CHE-DE studies can help to shed light on complex conditions, and several have included co-exposure to common elements such as allergens, ozone, and activity level. The ability of filters to mitigate the adverse effects of DE, by limiting exposure to the particulate fraction of polluted aerosols, has also been examined. While various biomarkers of DE exposure have been evaluated in CHE-DE studies, a definitive such endpoint has yet to be identified. In spite of the above advantages, this paradigm for TRAP is constrained to acute exposures and can only be indirectly applied to chronic exposures, despite the critical real-world impact of living long-term with TRAP. Those with significant medical conditions are often excluded from CHE-DE studies and so results derived from healthy individuals may not apply to more susceptible populations whose further study is needed to avoid potentially misleading conclusions. In spite of limitations, the contributions of CHE-DE studies have greatly advanced current understanding of the health impacts associated with TRAP exposure, especially regarding mechanisms therein, with important implications for regulation and policy.

8. **Impact of environmental pollution on the obesogenic environment.** Martínez-Esquivel A, Trujillo-Silva DJ, Cilia-López VG. Nutr Rev. 2022 Feb 9:nuac003. doi: 10.1093/nutrit/nuac003. Online ahead of print.
Obesity figures in the world continue to increase, representing a multifactorial and multidimensional problem. Efforts to contribute to reduction in obesity have led to the study of this condition from different approaches, including the obesogenic environment (OE), which is harmful to health due to the multiple factors that compose the OE. Some of the most important factors are stress, lifestyle, and urban design, framed in a food system that provides caloric foods and contributes to intake of hypercaloric diets. The OE exacerbates the obesogenic

process and chronic low-grade inflammation. However, these factors are not the only ones responsible for obesity. Environmental pollutants also contribute, because they interfere with metabolic processes that regulate lipid accumulation and increase body adiposity. In this review, we analyze the relationship between pollution and obesogenic processes. We postulate the inclusion of environmental pollution within the factors and definition of the OE.

9. **Ambient air pollution and cardiovascular diseases: An umbrella review of systematic reviews and meta-analyses.** de Bont J, Jaganathan S, Dahlquist M, Persson Å, Stafoggia M, Ljungman P. J Intern Med. 2022 Feb 9. doi: 10.1111/joim.13467. Online ahead of print. https://onlinelibrary.wiley.com/doi/abs/10.1111/joim.13467
The available evidence on the effects of ambient air pollution on cardiovascular diseases (CVDs) has increased substantially. In this umbrella review, we summarized the current epidemiological evidence from systematic reviews and meta-analyses linking ambient air pollution and CVDs, with a focus on geographical differences and vulnerable subpopulations. We performed a search strategy through multiple databases including articles between 2010 and 31st January 2021. We performed a quality assessment and evaluated the strength of evidence. Of the 56 included reviews, the most studied outcomes were stroke (22 reviews), all-cause CVD mortality and morbidity (19). The strongest evidence was found between higher short-and long-term ambient air pollution exposure and all-cause CVD mortality and morbidity, stroke, blood pressure and ischemic heart diseases (IHD). Short-term exposures to particulate matter <2.5µm (PM2.5), <10µm (PM10) and nitrogen oxides (NOx) were consistently associated with increased risks of hypertension and triggering of myocardial infarction (MI), and stroke (fatal and non-fatal). Long-term exposures of PM2.5 were largely associated with increased risk of atherosclerosis, incident MI, hypertension, and incident stroke and stroke mortality. Few reviews evaluated other CVD outcomes including arrhythmias, atrial fibrillation, or heart failure but they generally reported positive statistical associations. Stronger associations were found in Asian countries and vulnerable subpopulations, especially among the elderly, cardiac patients, and people with higher weight status. Consistent with experimental data, this comprehensive umbrella review found strong evidence that higher levels of ambient air pollution increase the risk of CVDs, especially all-cause CVD mortality, stroke, and IHD. These results emphasize the importance of reducing the alarming levels of air pollution across the globe especially in Asia, and among vulnerable subpopulations. This article is protected by copyright. All rights reserved.

10. **The COVID-19, Obesity, and Food Insecurity Syndemic.** Pryor S, Dietz W. Curr Obes Rep. 2022 Feb 9. doi: 10.1007/s13679-021-00462-w. Online ahead of print. https://link.springer.com/article/10.1007/s13679-021-00462-w
RECENT FINDINGS: The COVID-19 pandemic has exacerbated obesity, food insecurity, and the existing inequities in the essential workforce. Food insecurity is driven by unsustainable dietary patterns and is associated with higher rates of obesity, which increases the risk of COVID-19 infections, hospitalizations, and deaths. The COVID-19 pandemic has disproportionately impacted the essential food supply chain workforce. Strengthening the social safety net and expanding worker protections will increase food security and secure livelihoods during and beyond the scope of the COVID-19 pandemic. Strengthening local and regional food systems

provides a common solution to both the new Syndemic of COVID-19, Obesity, and Food Insecurity and the Global Syndemic of Obesity, Undernutrition, and Climate Change by promoting sustainable food production and consumption, and prioritizing the food supply chain workforce.

11. **Human health concerns regarding microplastics in the aquatic environment - From marine to food systems.** Yuan Z, Nag R, Cummins E. Sci Total Environ. 2022 Feb 7;823:153730. doi: 10.1016/j.scitotenv.2022.153730. Online ahead of print.
https://www.sciencedirect.com/science/article/pii/S0048969722008221
Marine plastic waste pollution is one of the most urgent global marine environmental problems worldwide. It has attracted worldwide attention from governments, the public, the scientific community, media and non-governmental organizations and has become a hot issue in current marine ecology and environmental research. This research aimed to conduct a traditional review of the current state of the art regarding microplastics (MPs) definition and characterisation, including an assessment of MPs detected in marine and food systems. The review revealed that plastic waste is not biodegraded and can only be broken down, predominantly by physical processes, into small particles of micron to nanometre size. Particles (<150 μm) can be ingested by living organisms, migrate through the intestinal wall and reach lymph nodes and other body organs. The primary pathway of human exposure to MPs has been identified as gastrointestinal ingestion (mainly seafood for the general population), pulmonary inhalation, and dermal infiltration. MPs may pollute drinking water, accumulate in the food chain, and release toxic chemicals that may cause disease, including certain cancers. Micro/nano-plastics may pose acute toxicity, (sub) chronic toxicity, carcinogenicity, genotoxicity, and developmental toxicity. In addition, nanoplastics (NPs) may pose chronic toxicity (cardiovascular toxicity, hepatotoxicity, and neurotoxicity). The toxicity of MPs/NPs primarily depends on the particle size distribution and monomeric composition/characteristics of polymers. Polyurethane (PUR), Polyacrylonitrile (PAN), Polyvinyl chloride (PVC), Epoxy resin, and Acrylonitrile-butadiene-styrene (ABS) are categorised as the most toxic polymers based on monomer toxicity. MP detection methods include combinations of spectroscopic analysis (RS and FTIR) and chromatography (TED-GC/MS). MP/NP toxicological properties and general quantitative and qualitative analysis methods used in MPs Risk Assessment (RA) are summarised. A robust dose-response model for MPs/NPs requires further investigation. This study lays the foundation for the evaluation of MP/NP risk assessment in the marine ecosystem and potential implications for human health.

12. **Can microplastics facilitate the emergence of infectious diseases?** Loiseau C, Sorci G. Sci Total Environ. 2022 Feb 7:153694. doi: 10.1016/j.scitotenv.2022.153694. Online ahead of print.
Plastic pollution is a major environmental problem. Small plastic particles (called microplastics) have been reported to have pernicious effects on human and wildlife health, by altering physiological functions (e.g., immunity, metabolism) and interfering with commensal microorganisms. However, in addition to these direct toxic effects, we suggest that microplastic pollution might also exert deleterious effects, modifying (i) the exposure to pathogens (e.g., multi-drug resistant bacteria) and (ii) the dynamics of vector-borne diseases. Therefore, we argue that microplastics should be considered as a ubiquitous environmental hazard,

potentially promoting the (re)emergence of infectious diseases. The implementation of multi- and interdisciplinary research projects are crucial to properly evaluate if microplastic pollution should be added to the current list of global health threats.

13. **The association of specific industry-related air pollution with occurrence of chronic diseases: A register-based study.** Bergstra AD, Been JV, Burdorf A. Environ Res. 2022 Feb 5;209:112872. doi: 10.1016/j.envres.2022.112872. Online ahead of print.
https://www.sciencedirect.com/science/article/pii/S0013935122001992
Air pollution may contribute to onset and progression of chronic diseases such as cardiovascular and respiratory diseases. Most studies have focused on the contribution of traffic-related exposure to PM10 or PM2.5. Our aim was to investigate the association of different components of industry-related air pollution on the occurrence of chronic diseases. A register-based repeated cross-sectional study was conducted among 89,714 subjects (2012) with 536,599 annual observations (2012-2017) living in the vicinity of a large industrial area in the Netherlands. Information from the dispensed medication registration was linked with a dispersion model to characterize annual individual-level exposure of all subjects at place of residence. Associations between annual exposure (concentration and duration) to particulate matter (PM10), nitrogen oxides (NOX), sulphur dioxide (SO2), and volatile organic compounds (VOC) with annual dispensed medication for cardiovascular diseases, respiratory diseases, diabetes mellitus, and inflammatory conditions were investigated by multivariate logistic regression analysis with generalized estimating equations (GEE) while controlling for confounders. Exposure to PM10 and to NOX (per µg/m3) were significantly associated with medication for cardiovascular diseases (OR 1.06, 95CI% 1.06-1.06 and OR 1.01, 95%CI 1.01-1.01 respectively). Exposures to PM10 and SO2 (per µg/m3) were significantly associated with medication for inflammatory conditions (OR 1.05, 95%CI 1.00-1.09 and OR 1.07, 95%CI 1.01-1.14 respectively). Exposure to SO2 was inversely associated with respiratory diseases (OR 0.91, 95%CI 0.86-0.97). Except for inflammatory conditions, exposure duration (years) was significantly associated with the other three chronic diseases (OR varying from 1.01 to 1.03). This study indicates that specific air pollution components caused by industry may contribute to the occurrence of cardiovascular diseases, respiratory diseases, diabetes mellitus, and inflammatory conditions.

14. **Exposure to ambient air pollution and cognitive decline: Results of the prospective Three-City cohort study.** Duchesne J, Gutierrez LA, Carrière I, Mura T, Chen J, Vienneau D, de Hoogh K, Helmer C, Jacquemin B, Berr C, Mortamais M. Environ Int. 2022 Feb 3;161:107118. doi: 10.1016/j.envint.2022.107118. Online ahead of print.
https://www.sciencedirect.com/science/article/pii/S0160412022000447
RESULTS: The participants' (n = 6380) median age was 73.4 years (IQR: 8.0), and 61.5% were women. At baseline, the median MMSE score was 28 (IQR: 3). Global cognition decline, assessed with the MMSE, was slightly accelerated among participants with higher PM2.5 exposure: one IQR increment in PM2.5 (1.5 µg/m3) was associated with accelerated decline (β: -0.0060 [-0.0112; -0.0007] standard unit per year). Other associations were inconsistent in direction, and of small magnitude.

CONCLUSION: In this large population-based cohort, higher PM2.5 exposure was associated with accelerated global cognition decline. We did not detect any significant association for the specific cognitive domains or the other pollutants. Evidence concerning PM2.5 effects on cognition is growing, but more research is needed on other ambient air pollutants.

15. **Environmental Air Pollution and Olfactory Decline in Aging.** Ekström IA, Rizzuto D, Grande G, Bellander T, Laukka EJ. Environ Health Perspect. 2022 Feb;130(2):27005. doi: 10.1289/EHP9563. Epub 2022 Feb 9.
https://ehp.niehs.nih.gov/doi/full/10.1289/EHP9563
RESULTS: Participants showed significant decline in odor identification ability for each year in the study {β = - 0.20 [95% confidence interval (CI): - 0.22, 0.18; p < 0.001]}. After adjustment for all covariates, residents of third [β = - 0.09 (95% CI: - 0.14, - 0.04; p < 0.001)] and fourth [β = - 0.07 (95% CI: - 0.12, - 0.02; p = 0.005)] exposure quartiles of PM2.5 had faster rates of olfactory decline than residents from the first quartile. Similar results were observed for the third [β = - 0.05 (95% CI: - 0.10, - 0.01; p = 0.029)] and fourth [β = - 0.07 (95% CI: - 0.11, - 0.02; p = 0.006) quartiles of NOx].
DISCUSSION: Our results suggest an association between air pollution exposure and subsequent olfactory decline. We speculate that cumulative effects of airborne pollutants on the olfactory system may be one underlying cause of olfactory impairment in aging.
https://doi.org/10.1289/EHP9563.

16. **Metals, Nanoparticles, Particulate Matter, and Cognitive Decline.** Calderón-Garcidueñas L et al. Front Neurol. 2022 Jan 21;12:794071. doi: 10.3389/fneur.2021.794071. eCollection 2021.
https://www.frontiersin.org/articles/10.3389/fneur.2021.794071/full
Exposure to metals is ubiquitous and emission sources include gasoline, diesel, smoke from wildfires, contaminated soil, water and food, medical implants, waste recycling facilities, subway exposures, and occupational environments. PM2.5 exposure is associated with impaired cognitive performance, neurobehavioral alterations, incidence of dementia, and Alzheimer's disease (AD) risk. Heavy-duty diesel vehicles are major emitters of metal-rich PM2.5 and nanoparticles in Metropolitan Mexico City (MMC). Cognitive impairment was investigated in 336 clinically healthy, middle-class, Mexican volunteers, age 29.2 ± 13.3 years with 13.7 ± 2.4 years of education using the Montreal Cognitive Assessment (MoCA). MoCA scores varied with age and residency in three Mexican cities with cognition deficits impacting ~74% of the young middle-class population (MoCA ≤ 25). MMC residents ≥31 years (x^{-} 46.2 ± 11.8 y) had MoCA x^{-}20.4 ± 3.4 vs. low pollution controls 25.2 ± 2.4 ($p < 0.0001$). Formal education years positively impacted MoCA total scores across all participants ($p < 0.0001$). Residency in PM2.5 polluted cities impacts multi-domain cognitive performance. Identifying and making every effort to lower key pollutants impacting neural risk trajectories and monitoring cognitive longitudinal performance are urgent. PM2.5 emission control should be prioritized, metal emissions targeted, and neuroprevention interventions implemented early.

17. **Queering Environmental Justice: Unequal Environmental Health Burden on the LGBTQ+ Community.** Goldsmith L, Bell ML. Am J Public Health. 2022 Jan;112(1):79-87. doi: 10.2105/AJPH.2021.306406.

https://ajph.aphapublications.org/doi/10.2105/AJPH.2021.306406
Comment in
Am J Public Health. 2022 Jan;112(1):57-58.
Am J Public Health. 2022 Jan;112(1):54-56.
The LGBTQ+ (lesbian, gay, bisexual, transgender/-sexual, queer or questioning, intersex, asexual, and all subsects) population has been the target of federal and state discriminatory policies leading to high levels of institutional discrimination in the housing, employment, and health sectors. Social determinants of health such as housing conditions, economic opportunities, and access to health care may negatively and disproportionately affect the LGBTQ+ population and reduce their capacity to respond to environmental harm (e.g., obtaining necessary medical care). Social determinants of health have been shown to be associated with unequal harmful environmental exposure, primarily along lines of race/ethnicity and socioeconomic status. However, chronic diseases, such as respiratory diseases, cardiovascular disease, and cancer, associated with environmental exposure have been shown to occur in higher rates in the LGBTQ+ population than in the cisgender, heterosexual population. We explore how environmental exposures may disproportionately affect the LGBTQ+ population through examples of environmental exposures, health risks that have been linked to environmental exposures, and social institutions that could affect resilience to environmental stressors for this population. We provide recommendations for policymakers, public health officials, and researchers.

18. **PM(2.5) exposure and pediatric health in e-waste dismantling areas.** Zeng X, Liu D, Wu W. Environ Toxicol Pharmacol. 2022 Jan;89:103774. doi: 10.1016/j.etap.2021.103774. Epub 2021 Nov 17.
Fine particulate matter (PM2.5) is the first leading environmental risk factor for death according to the Global Burden of Disease Study 2019. Children are in a pivotal window stage of growth and development, and one of the most sensitive and vulnerable groups when they are exposed to PM2.5. E-waste refers to the abandoned electrical or electronic equipment. Informal e-waste dismantling activities, such as heating, burning, and roasting, will release a large number PM2.5 into the local atmosphere. PM2.5 exposure levels are higher in e-waste dismantling areas than those in reference areas. PM2.5 derived from e-waste contains a variety of toxic and harmful components such as transition metals and persistent organic pollutants. Few studies have focused on the exposure levels of PM2.5 and its compositions in e-waste dismantling areas, but little is known about their effects on children's health. Therefore, this study will briefly summarize the impact of PM2.5 on children's health in e-waste dismantling areas.

19. **Potential effect of ocean pollution on human health, marine species, and health of the planet: adopting a planetary approach to a planetary problem.** Tajudeen YA, Oladunjoye IO, Ajide-Bamigboye NT. Int Marit Health. 2021;72(4):308-309. doi: 10.5603/IMH.2021.0057. https://journals.viamedica.pl/international_maritime_health/article/view/IMH.2021.0057/65190
Over the years, ocean pollution — which can be described as a complex combination of pollutants including plastics, toxic metals, oil spills and petroleum wastes, pharmaceutical wastes, agricultural run-off, urban and industrial wastes, and microbial wastes — has become

an increasingly growing global threat due to its devastating impact on human health and marine species by causing the death of millions of people and thousands of marine species per annum across the world [1, 2]. This threat has been on the rise since the beginning of the Agricultural Revolution and Industrial Revolution that brought about increased release of agricultural run-off containing fertilizers, animal wastes (that contains antibiotics residue) as well as industrial wastes such as toxic metals and chlorinated petrochemicals into the ocean by anthropogenic activities, thus, posing a threat to marine species, the human health, and planetary health — as a result of collapsed of fishing ground and reduced livelihood of populations in the coastal areas. The rising detrimental effect of ocean pollution on the health of humans, marine species, and the health of the planet can best be addressed effectively from a planetary health perspective.

WE ACT

20. **How Can We Act to Mitigate the Global Syndemic of Obesity, Undernutrition, and Climate Change?** Dietz WH, Pryor S. Curr Obes Rep. 2022 Feb 9. doi: 10.1007/s13679-021-00464-8. Online ahead of print.
https://link.springer.com/article/10.1007/s13679-021-00464-8
RECENT FINDINGS: This report builds on our earlier publication that described the Global Syndemic of Obesity, Undernutrition, and Climate Change. We focus here on the contributions that the USA makes to the Global Syndemic and the policy solutions necessary to reduce the effects of the transport and food and agriculture systems on greenhouse gas emissions and environmental degradation. A recent study suggests that people are interested and ready to address local solutions to climate change. Changing the individual behaviors that sustain the US transport and food and agriculture systems is the first step to the broader engagement necessary to build the political will that to achieve institutional, municipal, state, and federal policy.

21. **U.S. public health response to climate change, for allergists-immunologists.** Gillespie E, Schramm PJ, Hsu J. Ann Allergy Asthma Immunol. 2022 Feb 6:S1081-1206(22)00092-8. doi: 10.1016/j.anai.2022.02.002. Online ahead of print.
https://www.clinicalkey.com/#!/content/journal/1-s2.0-S1081120622000928
Climate change is already affecting public health through pathways like pollen, air quality, wildfires, and precipitation extremes or temperature extremes. This Perspective highlights some climate change related health impacts and U.S. public health response activities affecting allergy-immunology.

22. **Aligning disaster risk reduction and climate change adaptation in the post-COP26 era.** Valente M, Trentin M, Ragazzoni L, Barone-Adesi F. Lancet Planet Health. 2022 Feb;6(2):e76-e77. doi: 10.1016/S2542-5196(22)00013-4.
https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(22)00013-4/fulltext
The latest report of the Intergovernmental Panel on Climate Change (IPCC) shows that human activity contributes unequivocally to global warming and climate change. Climate change, in turn, drives the current increase in weather extremes and climate-related disasters. Moreover,

human-induced processes, such as unplanned urbanisation, further magnify disaster risk, putting an increasingly large portion of the global population in danger in the years to come.

23. **The determinants of planetary health: an Indigenous consensus perspective.** Redvers N, Celidwen Y, Schultz C, Horn O, Githaiga C, Vera M, Perdrisat M, Mad Plume L, Kobei D, Kain MC, Poelina A, Rojas JN, Blondin B. Lancet Planet Health. 2022 Feb;6(2):e156-e163. doi: 10.1016/S2542-5196(21)00354-5.
https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(21)00354-5/fulltext
Indigenous Peoples have resiliently weathered continued assaults on their sovereignty and rights throughout colonialism and its continuing effects. Indigenous Peoples' sovereignty has been strained by the increasing effects of global environmental change within their territories, including climate change and pollution, and by threats and impositions against their land and water rights. This continuing strain against sovereignty has prompted a call to action to conceptualise the determinants of planetary health from a perspective that embodied Indigenous-specific methods of knowledge gathering from around the globe. A group of Indigenous scholars, practitioners, land and water defenders, respected Elders, and knowledge-holders came together to define the determinants of planetary health from an Indigenous perspective. Three overarching levels of interconnected determinants, in addition to ten individual-level determinants, were identified as being integral to the health and sustainability of the planet, Mother Earth.

24. **Climate Change and Medical Education: An Integrative Model.** Sullivan JK, Lowe KE, Gordon IO, Colbert CY, Salas RN, Bernstein A, Utech J, Natowicz MR, Mehta N, Isaacson JH. Acad Med. 2022 Feb 1;97(2):188-192. doi: 10.1097/ACM.0000000000004376.
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Medical schools face a challenge when trying to include new topics, such as climate change and health (CCH), in their curricula because of competing demands from more traditional biomedical content. At the same time, an understanding of CCH topics is crucial for physicians as they have clear implications for clinical practice and health care delivery. Although some medical schools have begun to incorporate CCH into curricula, the inclusion usually lacks a comprehensive framework for content and implementation. The authors propose a model for integrating CCH into medical school curricula using a practical, multistakeholder approach designed to mitigate competition for time with existing content by weaving meaningful CCH examples into current curricular activities. After the authors identified stakeholders to include in their curricular development working group, this working group determined the goals and desired outcomes of the curriculum; aligned those outcomes with the school's framework of educational objectives, competencies, and milestones; and strove to integrate CCH goals into as many existing curricular settings as possible. This article includes an illustration of the proposed model for one of the curricular goals (understanding the impacts of climate change on communities), with examples from the CCH curriculum integration that began in the fall of 2020 at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University. The authors have found that this approach does minimize competition for time with existing content and allows mapping of content to existing curricular competencies and milestones,

while encouraging a broad understanding of CCH in the context of individual patients, populations, and communities. This model for curricular integration can be applied to other topics such as social determinants of health, health equity, disability studies, and structural racism.

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