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Conference Report

Preface and Abstracts of the 3nd International One Health Conference 2024

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https://doi.org/10.3390/msf2025033007

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Preface and Abstracts of the 3nd International One Health Conference 2024 †

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† Presented at the 3rd International One Health Conference, Athens, Greece, 15–17 October 2024.

Keywords: One Health; Mediterranean health resilience; climate adaptation strategies; community engagement

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Academic Editor: Umberto Aguglia

Published: 23 December 2025

Citation: Vito, D.; Ferrante, M.; Oliveri Conti, G.; Fernandez, G.; Maione, C.; Lauriola, P.; Piscitelli, P.; Jiménez Gómez Tagle, M.; Dora, C.; Serrano Pons, J.; et al. Preface and Abstracts of the 3nd International One Health Conference 2024. *Med. Sci. Forum* **2025**, *33*, 7. https://doi.org/10.3390/msf2025033007

Correction Statement: This article has been republished with a minor change. The change does not affect the scientific content of the article and further details are available within the backmatter of the website version of this article.

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1. Introduction

The International One Health Conference 2024 took place against the backdrop of the Mediterranean, a region emblematic of humanity's most pressing interconnected challenges, including climate change, environmental degradation, and persistent maternal and child health disparities. As a recognized climate-change hotspot, the Mediterranean basin faces accelerated warming, biodiversity loss, and intensifying extreme weather events that directly and indirectly affect population health [1,2]. Within this context, the region stood out as a nexus where risks, vulnerabilities, and exposures converge, underscoring the need for integrated approaches to risk reduction. The conference drew inspiration from the UN Sendai Framework for Disaster Risk Reduction, whose holistic perspective on risk governance provided a conceptual foundation for the discussions [3].

Guided by the Sendai Framework, the conference examined the complex dynamics of risk, highlighting climate change as a central driver amplifying existing hazards (see Figure 1). Participants emphasized the growing frequency of heatwaves, droughts, and vector-borne diseases, all of which place additional strain on health systems already

burdened by socio-economic inequalities [4]. Particular attention was devoted to the vulnerabilities of mothers and children, who are disproportionately affected by limited access to healthcare, nutritional insecurity, and increased exposure to environmental stressors such as air pollution and unsafe water sources [5]. The discussions underscored how these conditions exacerbate existing health inequalities, reinforcing the need for timely and targeted interventions.

Increase			Reduce	
Area1 - Ecosystems Resilience and Responsiveness	**Area 2 - Community Resilience and Responsiveness**	**Area 3 - Health effect of Disasters and Crises**	**Area 4 - Mitigate Ecosystem related Vulnerability Risk**	**Area 5 - Mitigate Community connected Vulnerabilities Risk**
TOPICS	TOPICS	TOPICS	TOPICS	TOPICS
Biodiversity conc Pandemic and Epidemic Vulnerability one One-Health , vulnerable communities, South Africa Wildlife Health and Conservation in Coastal Ecosystems Vector-borne Diseases and Climate Change Adaptation Strategies Nature Based Solution	Emerging Infectious Diseases and Pandemic Preparedness Sustainable Agriculture and Livestock Production Practices Urbanization and its Impact on Ecosystem Health (architects) Traditional Knowledge and Indigenous Practices for Health and Well-being One Health Education and Capacity Building Initiatives	Food Safety and Security in the Mediterranean Region Antibiotic Resistance: A One Health Approach Climate Change Impacts on Human and Animal Health Socioeconomic Factors Influencing One Health Challenges in the Mediterranean Heat Waves	Zoonotic Disease Transmission: Understanding and Mitigating Risks Marine Pollution and Its Effects on Human and Animal Health Disaster Preparedness and Response in the Mediterranean Region Waterborne Diseases and Aquatic Ecosystem Health Drought and quality to and access Water	Policy and Governance for One Health Approaches in the Mediterranean. Wildlife Trade and its Implications for Human and Animal Health Community preparedness to critical events

Figure 1. Domain framework of the conference based on the Sendai Framework.

The One Health approach served as a unifying framework throughout the conference, enabling participants to explore the interdependence of human, animal, and environmental health systems. Environmental degradation, ecosystem disruption, and pressures on food systems were identified as key factors shaping maternal and child health outcomes and intensifying susceptibility to climate-related threats [6]. By integrating insights from epidemiology, environmental sciences, veterinary health, and public policy, the conference fostered a rich cross-disciplinary dialog that supported more comprehensive risk assessments and adaptive strategies.

A major outcome of the event was the emphasis on strengthening collaborative efforts among policymakers, scientists, civil society, and local communities. Building resilience in Mediterranean societies was recognized as requiring not only technical innovation but also equitable governance, capacity building, and improved access to resources. Sessions dedicated to knowledge exchange and co-design showcased a range of context-specific solutions, including climate-informed healthcare planning, community early warning systems, and public education initiatives aimed at protecting vulnerable populations.

In conclusion, the International One Health Conference 2024 served as a catalyst for advancing integrated, evidence-based approaches to health and climate resilience in the Mediterranean. By bringing together diverse expertise and fostering collective action, the conference contributed to shaping a more sustainable and equitable regional response to the challenges of a rapidly changing climate.

2. Keynote Speeches

2.1. Global Plastic Production from 1950 to 2050 Is Expected to Rise from 9.2 Billion Tons

Mohamed El Banni
University of Sousse/University of Monastir

Global plastic production is expected to rise from 9.2 billion tons in 2017 to 34 billion tons by 2050. As a consequence, microplastic (MP) pollution is now recognized as

one of the four major global environmental issues, running in tandem with concerns such as ozone depletion, ocean acidification, and global climate change. The body of knowledge regarding their accumulation and biological effects in biological systems is still significantly limited. Due to its small size, environmental microplastic can be potentially dangerous as it can be easily absorbed by body tissues and organs. The inhalation or ingestion of MPs has been linked to potential human pathologies, as indicated by various studies. Indeed, recent studies have demonstrated the presence of plastic particles in human blood as well as in placentas providing strong evidence for the occurrence of plastic contamination in the human body.

Keywords: microplastics (MPs); environmental pollution; human health impacts; plastic production; biological accumulation

2.2. Transforming Towards Sustainability: Science–Policy Pathways for Achieving the SDGs

Phoebe Koundouri
Professor in Economics at Athens University of Economics and Business & Technical University of Denmark, President EAERE, Chair SDSN Global Climate Hub, Co-chair SDSN Europe, Director of AE4RIA

The keynote underscores the urgency of addressing today's multi-crisis—climate instability, biodiversity loss, widening inequalities, economic stagnation, and constrained fiscal space—through integrated, science-based policymaking. Building on the UN 2030 Agenda, Phoebe Koundouri highlights the Sustainable Development Goals as the only comprehensive global framework capable of steering a systemic transition. Europe's leadership in transposing the SDGs into policy via the European Green Deal demonstrates the feasibility of such transformation, despite the continent remaining far from full implementation. To bridge the gap between scientific knowledge and societal action, Koundouri presents the work of AIRE and the SDSN Global Climate Hub, which develops detailed decarbonization and resilience pathways grounded in interdisciplinary modeling across energy, land, marine, transport, health, and socioeconomic systems. The approach combines advanced models, stakeholder co-design, and open digital platforms for data, tools, and capacity building. Emphasis is placed on financing mechanisms—including reforming global financial architecture—and on urgent investment in education, upskilling, and reskilling, given the shortage of green-transition skills. The keynote concludes that while science and technology provide viable pathways, implementation depends on empowering stakeholders and enabling large-scale coordinated action.

Keywords: sustainable development goals; climate resilience; science–policy interface; decarbonization pathways; stakeholder engagement

2.3. Operationalizing One Health in Humanitarian Settings: Tools and Approaches from IWG-9

Casimiro Vizzini
One Sustainable Health for All Foundation

Humanitarian settings increasingly face severe health inequities driven by climate change, environmental degradation, and intensifying disasters. The One Sustainable Health for All Foundation—established in 2020 and operating under the Institut Pasteur since 2024—works to address these challenges by promoting collaborative, transdisciplinary solutions aligned with the SDGs. Within this framework, International Working Group 9 (IWG-9) develops operational strategies to apply One Health and Planetary Health principles in crisis environments, where vulnerabilities are amplified. IWG-9 identifies major barriers to implementation, including the misalignment between donor priorities and field realities, persistent gaps between academic research and operational practice,

and limited documentation of One Health outcomes in humanitarian contexts. To address these barriers, the group has produced a suite of practical tools, using flooding in Kenya as a representative case. These include an Impact Assessment Checklist to measure cross-sector health impacts, a Disease Watchlist and Prioritization tool to guide surveillance, and a Flood Impact Navigation Flowchart that supports decision-making in complex emergencies. Additionally, IWG-9 has created structured methodologies for stakeholder mapping—covering government agencies, NGOs, and international organizations—and for community engagement to ensure that interventions incorporate local knowledge and needs. Together, these tools aim to strengthen coordination, enhance preparedness, and improve health outcomes in disaster-affected settings. A call to action emphasizes the urgent need for sustained funding and broad adoption of these operational tools to achieve meaningful, scalable impact in humanitarian crises.

Keywords: one health; humanitarian crises; disaster response; operational tools; stakeholder engagement

2.4. The Planetary Boundaries Framework Sets out Precautionary Boundaries for Nine Critical Processes of Human-Driven Environmental Change

Amaya Celaya Alvarez
United Nations and European Commission

The Planetary Boundaries framework sets out precautionary boundaries for nine critical processes of human-driven environmental change. Beyond these boundaries, we all face the possibility of abrupt, large-scale changes in Earth system functioning and significant risks to societies and economies worldwide. Together, the Planetary Boundaries quantify a safe operating space at the global level, providing a dashboard for global sustainability. The Planetary Boundaries framework was first launched in 2009. Behind the framework lies over 50 years of international scientific effort to understand physical climate, geochemical and ecological processes, and their driving forces. During my professional experience and travels I have seen how these boundaries have been reached.

Keywords: planetary boundaries; climate emergency; one health; tipping points; environmental sustainability

2.5. The Critical Role of Entomological Surveillance in Mitigating the Impact of Vector-Borne Diseases Due to Climate Change

Antonios Michaelakis
Laboratory of Insects & Parasites of Medical Importance, Benaki Phytopathological Institute

Entomological surveillance has a critical role in mitigating the impact of vector-borne diseases due to climate change. Different mosquito species play an important role as vectors of pathogens. Particularly, native mosquito species such as Culex pipiens and invasive species such as Aedes albopictus pose a threat for the emergence or re-emergence of vector-borne diseases (VBDs). Entomological surveillance is considered critical for both operational and research purposes. Within the framework of systematic entomological surveillance of mosquitoes, more than 55 adult mosquito traps (BG-Sentinel 2—BGS2) and over 110 ovitraps have been operating continuously since 2021 in the Attica region (Greece). These traps (BGS2 and ovitraps) are operated throughout the year and inspected weekly. Based on the obtained results, we have data on the seasonal abundance of mosquito species in the Attica region. From these results, we recorded changes in the winter activity of Ae. albopictus and the presence of WNV-positive Culex pipiens mosquitoes during winter periods. These findings clearly indicate the effect of climate change on vectors and VBDs, supporting the need for integrated mosquito management throughout the year.

Keywords: entomological surveillance; vector-borne diseases; climate change; mosquito species; integrated mosquito management

2.6. Climate Change Is Severely Undermining Health in the Mediterranean Region, Including Through the Effects of Extreme Heat, Wildfires, Food Security, Displacement and the Spread of Infectious Disease

Jessica Beagley
Global Climate and Health Alliance

Climate change is severely undermining health in the Mediterranean region, including through the effects of extreme heat, wildfires, food security, displacement and the spread of infectious disease. These local realities must be better addressed in international policymaking, including in UNFCCC processes. Health entry points exist in UNFCCC negotiations on loss and damage, and adaptation. The international health and climate community is increasingly well-coordinated and negotiators' attention to health is growing. Application of a One Health and holistic planetary health approach when engaging with these processes is essential to protect the health and well-being of all.

Keywords: climate change; health impacts; Mediterranean region; one health; UNFCCC processes

2.7. The Combined Climate and Environmental Crises Are the Greatest Threat to Global Health

Mark Maslin
University College London

The combined climate and environmental crises are the greatest threat to global health. To deal with these twin challenges we must plan for a net zero world that provides a healthy, safe, and low environmental impact life for 10 billion people by 2050. At the same time, the world's economy will double or even triple. This is the challenge of our age. This talk will examine the health impacts of climate change now and potential into the future. It will also discuss how many of the solutions to both the climate and environmental crisis will improve the health and security of the very poorest people in our global society.

2.8. One Health, and Global Emergencies: Lessons from COVID-19 for an Integrated Legal–Scientific Framework

Matteo Gnes
Università di Urbino Carlo Bo

In this keynote, Matteo Gnes reflects on how the COVID-19 pandemic exposed the limits of traditional legal approaches and demonstrated the need for deeper integration between law, science, and technology. COVID-19 generated an unprecedented global wave of legislation, revealing both the centrality and the fragility of legal systems in managing health emergencies. Gnes argues that law should not be the starting point but a connective instrument linking scientific evidence, social sciences, and governance needs. Building on the quadripartite definition of One Health, he highlights the necessity of a preventive, ecosystem-based legal perspective that accounts for interdependencies among human, animal, plant, and environmental health. While One Health extends beyond crises, it must also inform emergency governance, as reflected in the WHO pandemic treaty draft. Gnes presents the mission of EIGER, founded during the pandemic to advance interdisciplinary legal responses to global emergencies, and emphasizes collaboration with scientific communities and networks such as the Global Pandemic Network. The keynote concludes with a call for continuous interdisciplinary cooperation to strengthen preparedness and develop comprehensive regulatory frameworks for future global health threats.

Keywords: one health; COVID-19; legal frameworks; global emergencies; interdisciplinarity

2.9. Surveillance and Prevention of Heat Wave Effects in Sicily: A Regional One Health Approach

Sebastiano Pollina Addario
Department of Epidemiology, Regional health authority Sicily, Italy

Heat waves represent an increasingly critical public health threat in the Mediterranean region, exacerbated by climate change and intensified seasonal extremes. This presentation describes the surveillance and prevention system developed by the Region of Sicily to mitigate the health impacts of extreme heat through a coordinated multi-sectoral framework. The system is grounded in the Regional Guidelines, drafted in accordance with the Ministry of Health directives (D.A. n° 01115/12), which provide practical recommendations, scientific evidence, and operational experience to support local health authorities, general practitioners, municipal administrations, civil protection agencies, and volunteer networks. Operational intervention plans at the municipal level are updated according to national alert levels and include the establishment of dedicated coordination units, collaboration with social services, and the identification of susceptible individuals using administrative datasets. Complementing these measures, the Regional Civil Protection Bulletin issues daily fire and heat-wave warnings covering the entire territory, offering crucial reference data for municipalities not served by the national alert system. Data from summer 2023 reveal a marked increase in level 2–3 alert days across Italy, with an average of 17 alert days per city and peaks of up to 31. Sicily experienced two major heat waves in July, contributing significantly to the seasonal burden. Preventive actions also emphasized UV-risk communication, with continuous outreach activities and a target of engaging 75% of local health agencies by 2024. This model highlights an integrated One Health-aligned strategy to enhance resilience against extreme heat events in vulnerable Mediterranean regions.

Keywords: heat waves; surveillance; civil protection; public health preparedness; Sicily

2.10. Climate Change Has Profound Impacts on Public Health

Sotirios Tsiodras
University of Athens Medical School, Greece

Climate change has profound impacts on public health. Of particular concern is its influence on the transmission and prevalence of communicable diseases. As global temperatures rise and weather patterns shift, the habitats of vectors such as mosquitoes expand, leading to an increase in diseases like malaria (e.g., Pakistan's epidemic in 2022) and dengue (America's epidemic in 2024), and expansion of diseases like West Nile virus in new regions. Additionally, extreme weather events, such as floods and hurricanes, contribute to the spread of waterborne diseases. These changes disproportionately affect vulnerable populations, especially in regions with limited healthcare infrastructure. Climate-driven displacement and migration further exacerbate the spread of infectious diseases, as crowded living conditions increase the likelihood of transmission. Immediate coordinated public health efforts are necessary to confront and adapt to these evolving challenges.

Keywords: climate change; communicable diseases; vector expansion; extreme weather events; public health vulnerability

2.11. Health in the Climate Crisis: From Mediterranean Realities to Global Action

Antonis Kolimenakis
Technical Officer, Climate Change and Health, World Health Organization Headquarters

In this keynote, Antonis Kolimenakis outlines why climate change has become a central priority for the World Health Organization (WHO) and emphasizes the urgent need to elevate health within climate policymaking. He highlights increasing climate-related health threats—extreme heat, emerging vectors such as Aedes mosquitoes, and shifting

disease patterns—already affecting the Mediterranean region. WHO's Climate Change and Health program supports countries in strengthening climate-resilient health systems through national health adaptation plans, vulnerability assessments, and strategies for sustainability and decarbonization, noting that the health sector accounts for nearly 6% of global emissions. Kolimenakis stresses the persistent challenge of inadequate financing, particularly for countries of the Global South that contribute least to climate change yet face its most severe impacts. He presents key global initiatives, including the COP26 Health Commitments and the ATACH network, which now includes 86 countries working toward resilient and low-carbon health systems. The keynote concludes with a call for stronger international cooperation, evidence-based decision-making, and recognition of health as a core dimension of climate governance, echoing WHO's assertion that the climate crisis is fundamentally a health crisis.

Keywords: climate change; health systems; WHO; adaptation; one health

2.12. One Health, Food Systems, and the Mediterranean Diet: Sustainability Challenges in a Changing Climate

Antonia Trichopoulou
Hellenic Health Foundation; Expert in Nutrition and Mediterranean Diet Studies

In this keynote, Antonia Trichopoulou explores the role of food systems within the One Health framework, emphasizing their deep interconnection with environmental, human, and ecosystem health. She highlights the need for conceptual clarity about One Health, recalling that ecosystem integrity underpins food security, water availability, and disease dynamics. Climate change, biodiversity loss, and resource scarcity directly threaten agricultural productivity, as illustrated by declining olive yields in Crete. Trichopoulou discusses the EAT–Lancet Commission's proposal for a universal sustainable diet, capable of preventing millions of premature deaths annually, and notes that dietary choices—particularly high meat consumption—significantly shape greenhouse gas emissions. One third of human-caused climate impacts originate from food systems, yet this dimension remains undervalued in One Health policy debates. The keynote underscores the Mediterranean diet as a model of both health and sustainability: included in UNESCO's Intangible Cultural Heritage list for its environmentally respectful practices, it has repeatedly been ranked the world's best diet. Despite this, adherence is declining in Mediterranean countries, especially among younger generations. Trichopoulou calls for renewed commitment to sustainable nutrition policies, public awareness, and food-system transformation to align dietary habits with planetary and human health.

Keywords: one health; Mediterranean diet; food systems; sustainability; climate change

2.13. Building Global Resilience: The Role of the Global Pandemic Network in Advancing One Health, Human Rights, and Environmental Protection

Elisa Scotti
Global Pandemic Network; University of Roma Tre, Italy

In this keynote, Elisa Scotti presents the mission, evolution, and scientific foundations of the Global Pandemic Network (GPN), a worldwide community of scholars established during the COVID-19 crisis to integrate legal, environmental, and human-rights perspectives into global emergency response. Originating from collaborations among universities in Europe, the United States, Africa, Asia, and Oceania, the network now connects diverse disciplines to advance an eco-law approach grounded in prevention, precaution, non-regression, and ecological resilience as a prerequisite for societal, institutional, economic, and health resilience. Scotti highlights partnerships with organizations such as EIGER and

WHO, including the development of an open-access global database of COVID-19 case law and contributions to the draft One Health-based international pandemic treaty. The GPN frames resilience through a human-rights-centered lens, promoting governance models that protect both people and ecosystems. Through its annual global conferences and its journal Legal Policy and Pandemics, the network disseminates research on One Health, digital society, government responses, and healthcare systems. Scotti concludes by inviting broader participation to strengthen interdisciplinary cooperation and to support future global strategies for pandemic preparedness and environmental protection.

Keywords: global pandemic network; one health; ecological resilience; human rights governance

2.14. Healthy and Resilient Architecture: A Case Study in Barcelona

Txell Manresa Traguany
Architect, Mipmarí

This study presents a Mediterranean-inspired approach to healthy and resilient architecture through the work of Mipmarí and the case study Palo Alto Biofilia in Barcelona. The project is grounded in a design philosophy that balances three interdependent dimensions: the well-being of people, the heritage and identity of the territory, and long-term economic sustainability. Rooted in Mediterranean sensitivity, this framework promotes architectural practices that integrate human-centered design, environmental respect, and efficient resource management. The Palo Alto Biofilia intervention illustrates how biophilic strategies, local materials, and culturally responsive solutions contribute to healthier spaces and more resilient urban environments. By reconnecting architecture with nature, community, and place, the study highlights a model capable of addressing contemporary challenges such as social well-being, ecological preservation, and economic viability. This case demonstrates how a holistic Mediterranean perspective can guide the development of sustainable architectural practices adaptable to future urban transitions.

Keywords: resilient architecture; Mediterranean design; biophilia; sustainability; Barcelona

3. Oral Session

3.1. Identification and Genetic Characterization of Alphacoronavirus, Nobecovirus, and Severe Acute Respiratory Syndrome-like Coronavirus from Bats in Bangladesh

Ausraful Islam [1], Mohammad Enayet Hossain [1], Md. Rakib Hasan [1], Konad Debnath [1], Mojnu Miah [1], Md. Jahidul Kabir [2], Imran Ahmed [2], Rashedul Hasan [1], Mohammed Ziaur Rahman [1], Branka Horvat [3] and Cyrille Mathieu [3]

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2 Bangladesh Forest Department, Bangladesh
3 International Center for Infectiology Research (CIRI), Bangladesh

The recent pandemic caused by SARS-CoV-2 is thought to have spilled over from animals to humans. *Rhiniolophus* bats are considered as the natural reservoirs for SARS-like coronaviruses. Our objective was to analyze the diversity of coronaviruses in different bat species in Bangladesh. We collected a rectal, urine, and throat swab from each bat in TRIzol/lysis buffer and used reverse transcription with a high-capacity cDNA reverse transcription kit. We used semi-nested PCR to amplify the highly conserved region of the RNA-dependent RNA polymerase (RdRp) gene (~434 bp) to detect Coronaviridae. Among 710 bats we captured, 70 bats (10%), comprising 15/137 *Pteropus medius*, 22/280 *Rhinolophus* sp., 13/102 Rousettus leschenaultii, 1/93 *Pipistrellus* sp. and 19/98 Cynopterus sphinx, tested positive for coronavirus. The Bat SARS-like CoV strains detected among two *Rhiniolophus* sp. bats showed >80% nucleotide identities with SARS-CoV-2, and human

SARS-CoV-1. Further research is required to better understand bat–virus interaction to develop intervention strategies.

Keywords: coronavirus; *Rhinolophus*; pteropus; betacornavirus; alphacoronavirus

3.2. Innovative Method in Microalgae Processing for Environmental and Health Applications

Carmen Sica [1], Claudia Favara [1], Sheyma Inoubli [2], Chiara Copat [1], Giuseppe Bonfante [3], Luciano Falqui [4], Maria Dolores Torres [5], Mimmo Scollo [5], Herminia Dominguez Gonzalez [5] and Margherita Ferrante [1]

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6 Originy s.r.l. Società Benefit

Microalgae play a crucial role in the energy transition towards more sustainable and low-carbon sources. Their production contributes to the process of mitigating climate change by directly reducing CO_2 concentrations in the atmosphere. The Spirulina are known for their health and wellness benefits due to their content of bioactive compounds. Among these, C-phycocyanin is important for the immune system, antioxidant, natural detox, weight loss support, benefits for skin and hair, and anti-cancer properties. This study aims to minimize the carbon footprint through the biological capture by these microalgae and simultaneously aims to evaluate, monitor, and modify the growth parameters of the culture for better optimization of C-phycocyanin extraction. The microalgae were cultivated using a 4000 L horizontal photobioreactor located within the Plastica Alfa S.p.A. facility. The samples were freeze-dried until reaching a weight of 100 g for conducting a C-phycocyanin extraction test. For the experiments, the same solid/liquid ratio of 1:20 g/mL as in the freeze-thawing method was used as well as the ultrasound method with a green solvent. PC concentration was determined using a UV-Vis spectrophotometer at wavelengths 620 and 650 nm and was calculated using the concentration. We observed that the best extract of spirulina was achieved with the freeze-thawing method, as it results in a higher concentration of C-phycocyanin (about 6050 mg/mL) and less contamination compared to the use of the green solvent and the ultrasonic method. In conclusion, microalgae represent a strategic resource for mitigating climate change due to their ability to reduce CO_2 level and promote environmental sustainability. Additionally, they provide important compounds such as dietary supplements, immune system boosters, energizing drinks and immunostimulants.

Keywords: C-phycocyanin; green biocompounds

3.3. Climate Change: A Right to Mental Health Perspective

Giulia Bosi
Scuola Superiore Sant'Anna, Italy

Extreme weather events, which are more frequent and/or intense due to global warming, can lead to considerable stress and eventually to severe mental health conditions. In addition, climate change adversely impacts the social, economic and environmental determinants of mental health, such as air and water quality, food security, income and livelihoods. Finally, individuals and communities may be particularly distressed about environmental and ecological issues. This state has been described in various ways, including

'eco-anxiety', 'solastalgia', and 'environmental distress', and it appears to affect especially the mental health of children and youth. Starting from this premise, this paper analyses the content and scope of the right to mental health, its application in the context of climate change, and investigates whether and how this issue is currently being addressed in the field of so-called climate litigation.

3.4. Climate Change Risk Impacts on Public Health Correlated with Air Pollution, African Dust in South Europe

Ioannis Adamopoulos [1], Niki Syrou [2] and Domenico Vito [3]

1 Hellenic Republic Region of Attica, Department of Environmental Hygiene and Public Health Inspections
2 Department of Physical Education and Sport Science, University of Thessaly
3 Metabolism of Cities Living Lab (MOC-LLAB), Center for Human Dynamics in the Mobile Age, San Diego State University, USA

Climate change poses significant risks to the environment and public health, leading to extreme weather patterns, rising sea levels, and the loss of biodiversity. The relationship between air pollution from African dust and climate change demonstrates its critical role in trapping heat in the atmosphere, resulting in heat-related illnesses, heart problems, and respiratory issues. This research points to the detrimental effects of pollutants such as smog, dust, acid rain, and ozone depletion on ecosystems, highlighting the importance of using Geographically Weighted Regression modeling and MODIS-NDVI analysis to address air pollution. Particulate matter (PM 2.5–10) and ozone levels can have negative impacts on respiratory and cardiovascular health. Proactive steps, such as implementing clean energy technologies and enforcing stricter pollution regulations, are necessary to protect public health. Taking action is crucial to addressing these global challenges and creating a cleaner, healthier future for future generations, underscoring the need for climate justice commitment.

Keywords: climate change; climate risks; public health; air pollution; African dust; Europe

3.5. The Global Climate Crisis Is Associated with Environmental Risks and Heat Stress Impacts on Occupational Safety, Health, and Hygiene

Ioannis Adamopoulos [1], Niki Syrou [2], George Mpourazanis [3], Theodore Constantinidis [4] and George Dounias [3]

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The relationship between the global climate crisis associated with environmental risks and occupational hygiene has not been extensively studied. This study develops a framework for identifying how climate change and the climate crisis could impact the workplace environment, workers, and occupational morbidity, mortality, and injury. A framework was developed based on a review of scientific literature published from 2012 to 2024 that addresses climate risks, their interaction with occupational hazards, and their effects on the workforce. Eight categories of climate-related hazards are identified: increased high temperatures, dust and air pollution, sun and cosmic ultraviolet exposure,

pandemics and infectious diseases, diseases transmitted by insects and changes in ecosystems, industrial occupational diseases, changes and crises in the built environment, and extreme weather events. It is important to consider the possibility of interactions between known hazards and new conditions and the productivity of workers, especially those who are most at risk of heat-related illnesses.

Keywords: global climate crisis; environmental risks; heat stress; occupational safety; public health; public hygiene

3.6. The Microalga Haematococcus Pluvialis in the Energy Transition: From Decarbonization to the Production of Bioactive Substances Applicable in Preventive Medicine

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Microalgae play a pivotal role in the energy transition to more sustainable, low-carbon sources. *Haematococcus pluvialis*, known for its biotechnological uses, is an excellent natural source of astaxanthin and other powerful antioxidant and anti-inflammatory carotenoids (1). This study aims to minimize carbon footprints through biological capture by *H. pluvialis*, and to enhance bioactive compound production by optimizing growth parameters. A photobioreactor (PBR) was set up using modified BG-11 medium, maintaining stable physicochemical parameters throughout the growth cycle. Once biomass reached 6 g/dry mass, part of the culture was subjected to abiotic stress to induce a transformation to the red phase, rich in lipids and carotenoids, especially astaxanthin. Carotenoid extraction employed cold pretreatment followed by ultrasonication and spectrophotometric analysis. Spectrophotometric analysis showed significant carotenoid presence, particularly astaxanthin, which increased fourfold in the red phase (from 0.005 μg/g to 0.013 μg/g). In line with COP28 goals, microalgae are a strategic resource for addressing energy transition challenges. Their carbon capture potential and environmental sustainability position them centrally in efforts to foster a cleaner, greener energy future. Additionally, the development of green extraction methods could offer more sustainable and safer bioactive compounds, reducing harmful chemical solvent use and minimizing environmental impact.

Keywords: *Haematococcus pluvialis*; astaxanthin bioactive compounds

3.7. Embryotoxicity of Polystyrene Microplastics and Bisphenol A in Black Sea Urchin Arbacia lixula Assessed by Multi-Biomarkers and -Omics Approaches

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The increasing use of disposable and plastic-made materials has caused the spread of emerging toxicants. Microplastics (MPs, <5 mm) affect the biota due to their tiny size and role as vectors for contaminants. The toxicity mechanisms of pollutant mixtures are still unclear, therefore within the project PRIN 2020 (20204YRYS5_003), the embryotoxic effects of polystyrene MPs (PS MPs, 1 and 5 μm; 10 μg/mL) and bisphenol A (BPA; 5 and 25 μM), alone and combined, were assessed on black sea urchin *Arbacia lixula* by multi-biomarkers and -omics approaches. BPA induced skeletogenic abnormalities at 5 μM and developmental block at 25 μM. PS MPs did not alter embryogenesis, whereas co-exposure with BPA provoked morphological changes. NMR-based metabolomics revealed disorders in energy

metabolism and biomineralization, besides serotoninergic and cholinergic neurotoxicity further supported by inhibition in acetylcholinesterase activity. Toxicodynamics of PS MPs and BPA will help to understand their risks to marine organisms and human health.

Keywords: polystyrene microplastic; bisphenol A embryotoxicity; sea urchin embryos toxicodynamics; metabolic pathways; biomarkers

3.8. One Health Geospatial Modeling of Bithynia sp. *Snail Distribution Under Climate Change for Future Opisthorchiasis Control*

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Opisthorchiasis, caused by the foodborne trematode *Opisthorchis viverrini*, is a significant public health concern in Southeast Asia. *Bithynia* sp. snails act as intermediate hosts, and their distribution is crucial for understanding transmission risk. This study introduces a new approach that uses machine learning-enhanced geospatial modeling to predict the future distribution of *Bithynia* sp. snails suitable for *Opisthorchis viverrini* transmission under climate change scenarios. This approach integrates ecological niche modeling with climate projections, providing valuable insights for targeted interventions and resource allocation in regions at risk for future Opisthorchiasis outbreaks. By employing a One Health approach, this study fosters collaboration between human and animal health sectors, alongside environmental considerations, for more effective disease control strategies.

Keywords: one health geospatial opisthorchiasis; climate change; *Bithynia* sp. snail

3.9. In Vitro Neurotoxic Effects of the Exposure to Micro- and Nanoplastics

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Micro- and nanoplastics are ubiquitous pollutants whose exposure has been linked to various toxic effects. Neurotoxicity is a potential capacity of these widespread pollutants. However, the size of plastic particles able to pass the blood–brain barrier, as well as the pathogenic molecular process, are yet unknown. This study investigated the mechanisms of neurotoxicity of micro- and nanoplastics in human neuroblastoma SHSY-5Y cells. We used polystyrene (PS) particles with diameters of 0.1 and 1 μm, both virgin (v-nPS/mPS) and in home oxidized (ox-nPS/mPS) to simulate the natural damage of the plastics in the environment. Cytotoxic effects such as loss of viability, changes in the acidic compartment, ROS production, mitochondrial dysfunction, and DNA damage were assessed in relation to size and artificial aging. There were no significant differences in cell mortality between ox-PS (29.3%) compared to virgin ones (24.4%), as well as between nano- and micro-sized particles. The lisosomal compartment appeared more damaged in v- and ox-n PS-treated cells (Δ% area of −37% and −48%, respectively) and in ox-m PS-treated cells (−37.7%). Furthermore, a dose- and time-dependent overproduction of ROS was observed, in line with decreased transmembrane potential and DNA damage, mainly attributable to oxidized particles against virgin ones and mPS versus nPS. The results obtained highlight the ability of oxidized micro- and nanoplastics to induce oxidative stress and mitochondrial dysfunction, both mechanisms involved in degenerative processes such as Parkinson's and Alzheimer's. It is necessary to strengthen the study of plastic pollution effects and the human health interactions.

Keywords: microplastics; nanoplastics; neurotoxicity

3.10. The Pro-Inflammatory Potential of Respirable Micro and Nano Polystyrene Plastics: A Risk for Lung Health

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Micro-and nanoplastics pose a real risk to human health, and their presence in both outdoor and indoor environments is of great concern. They are part of the respirable portion of atmospheric particulate matter and thus they can be a trigger for the genesis of sterile inflammation involved in lung pathogenesis. In order to assess the pro-inflammatory potential of these xenobiotics, we used polystyrene particles with diameters of 0.1 and 1 μm both 'virgin' (v-nPS/mPS) and oxidized (ox-nPS/mPS) to simulate the degradation processes that plastics undergo in the environment, and two human cell lines (A549 and THP-1) like biological models. To study the response of the monocytes to the inflammatory signal transmitted by the A549 through the release of soluble factors, THP-1 were also exposed to the supernatants of previously nPS/mPS-treated A549. After the exposure, real-time PCR and ELISA assays were performed on both exposed cellular lines. Our tests showed an imbalance of the Bax/Bcl-2 ratio in A549, which was able to trigger the inflammatory cascade by inhibiting immunologically silent apoptosis. NFkB involvement was confirmed by overexpression of p65 after exposure to ox-nPS and v- and ox-mPS. Rapid and higher levels of IL-1β, only in THP-1 cells, underlined the activation of the NLPR3 inflammasome. Recently, some progress has been made in identifying the pathogenic mechanisms triggered by ubiquitous nano- and microplastic pollutants. In this study their pro-inflammatory effect is highlighted as a potential pathway for inflammation-based diseases.

Keywords: inflammation; microplastics; nanoplastics

3.11. Microplastics in Wastewater: The Dual Role of Vehicles and Scavengers of These Ubiquitous Contaminants

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Tons of microplastics flow into wastewater every day, interacting with highly toxic pollutants. This interaction underlines the role of microplastics as polluting vehicles, but also, their possible use as scavengers in wastewater treatment. To investigate how the adsorption of a complex mixture of wastewater pollutants influences the toxicity of microplastics, we added polystyrene microplastics (Ø1 μm), both virgin (V-Ps) and oxidized (Ox-Ps), to mimic the "aging" process, to the wastewater of an Italian University Hospital. After 48 h of contact, we isolated the microplastics and tested their cytotoxicity at concentrations of 50 and 200 μg/mL, by MTT assay, in HT29 cells. The results showed a higher mortality in cells exposed to Ox-Ps compared to V-Ps (50 μg/mL), 18.7% and 5.9%, respectively. At the higher concentration, the mortality was 34.8% for Ox-Ps and 21.8% for V-Ps. Cytotoxicity increased significantly after exposure to microplastics incubated with wastewater, with an increase in mortality of 243.3% and 126.6% for V-Ps 50 and 200 μg/mL, respectively, compared to microplastics incubated in ultrapure water. The difference is reduced for OX-Ps, with mortality increases of 83.2% and 81.3% for Ox-Ps 50 and 200 μg/mL, respectively. The role of microplastics as vehicles increases their toxicity as the absorption of pollutants can result in subsequent desorption after ingestion by aquatic animals, and moving up the food chain, which determine a significant risk for human

health. However, these interactions fuel the idea of using microplastics in the development of sustainable technologies for wastewater treatment.

3.12. Water Quality in the Innovative Aquaculture System

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Aquaculture is becoming increasingly important in the European Union for food security and sustainability. The "sAMpEI" project of the University of Catania has introduced an innovative closed cycle multitrophic intensive aquaculture model. This model aims to valorize unused water resources for fish fattening, offering new economic opportunities to rural businesses and contributing to sustainable water management and strengthening the agricultural sector. The water in these aquaculture systems exhibits chemical parameters such as pH, conductivity, COD (Chemical Oxygen Demand), BOD (Biochemical Oxygen Demand), total suspended solids, sulfides, sulfates, cyanide, phenols, aldehydes, etc., that are within the normal range. Aquaculture is crucial for food security, environmental protection and the economic development of rural areas. Through the optimal use of internal water resources and the use of innovative technologies, it is possible to promote sustainable growth and make aquaculture a key element for the future.

Keywords: aquaculture; water; chemical parameters

3.13. Potential Oxidative and Inflammatory Effects Induced by PM2.5 in Olfactory Ensheathing Cells (OECs) and SH-SY5Y Cells

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PM2.5 in the atmosphere can favor the onset of neurodegenerative diseases. Our research evaluates oxidative and inflammatory processes in OECs and SH-SY5Y cells. Cells were exposed in vitro to PM2.5 extracts to evaluate the viability, mitochondrial damage, cytoskeletal modifications and expression of caspase-3. ELISA tests were performed for the determination of SOD and cytokine levels (IL-2, 3, 6, 8, 17, TNFα). Both cell lines showed reduced viability after exposure to PM2.5, and some samples showed increased mitochondrial damage, alteration of vimentin functionality and presence of effector caspases. We detected an increase in the levels of some cytokines (IL-3 and IL-6) after 72 h of exposure to PM2.5. Our results highlighted the possible effects of PM2.5 on cells. Furthermore, we detected molecules involved in oxidative and inflammatory processes associated with neurodegenerative processes. Consequently, the reduction in PM2.5 emissions is a fundamental objective for environmental and public health.

Keywords: environmental pollution; PM2.5; public health; neurodegenerative diseases

3.14. PGEs in PM2.5 from the City of Catania and Their Toxicological Evaluation on Neuronal Cells: First Data from the AIRBOrnE Study

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Exposure to PM2.5 has been widely associated with respiratory, cardiovascular, and tumor diseases. It has been shown that PM2.5 and the pollutants adsorbed can cross the olfactory barriers reaching the brain and activate inflammation and apoptosis responses. The aim of this study was the characterization of the platinum group elements (PEGs: Platinum, Palladium, and Rhodium) emitted by cars' catalytic systems in PM2.5 from Catania. Currently, there is no data on the concentration of PEGs in urban environments and their toxicity. PEGs were determined by ICP-MS in PM2.5 samples. Furthermore, about the concentrations of the PGEs detected in the PM2.5, standard mixtures of PEGs were prepared at three different total concentrations 3, 15, and 30 pg/L, and for the first time cell viability tests (MMT) were conducted on cells SH-SY5Y neuro-blastoma cell line by exposing them to the aforementioned mixtures. Results showed in the sample of PM 2.5 the presence of 30, 30, and 10 pg/m^3 of Palladium, Platinum, and Rhodium, respectively. The MMT test showed a loss of cell viability at low, medium, and high levels of the standard mixture at 8.1, 9.33, and 28.04%, respectively. The first data from the AIRBOrnE project highlight a possible neurological toxicity from exposure to PM2.5 considering only the role played by transported PEGs. These data, together with the results of the complete characterization of particulate matter, will allow for the first time to evaluate the exposure risk for citizens and identify public health indications to prevent the neurological effects resulting from urban PM2.5.

Keywords: PEGs; PM2.5; neurological risk

3.15. Evaluation of a Mobile Phone-Based Intervention for Early Detection of Avian Influenza Virus in Live Bird Markets of Bangladesh

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Avian influenza virus (AIV), a zoonotic pathogen with pandemic potential, has been circulating among poultry in Bangladesh. We, USAID's STOP Spillover Bangladesh team, in collaboration with the government (One Health Secretariat, Institute of Epidemiology Disease Control and Research, Department of Livestock Services, Bangladesh Forest Department, and Dhaka North City Corporation) and civil society (One Health Bangladesh) partners have developed and evaluated a mobile phone-based system to report mortality in poultry, wild and pet birds in and around live bird markets (LBM) by LBM workers and consumers for early detection of AIV. The system includes an android app (Socheton), and a gateway to receive reports from button phones and is integrated with a web platform. We deployed the system in two LBMs having a total of 38 shops in Dhaka, the capital of Bangladesh. We trained the LBM workers to send reports through the system, pasted posters with guidelines, and installed free Wi-Fi for the LBM workers in both markets.

Upon receiving reports, we collected pooled tracheal and cloacal swabs and environmental samples from the poultry shops in VTM after obtaining written consent from the shop owners. From 17 March to 31 May, a total of 74 workers and 108 consumers have installed the app. We received 238 validated reports of 475 poultry deaths. In total, 188/254 (74%) pooled tracheal and cloacal swabs and 39/54 (72%) environmental swabs tested positive for AIV using PCR. Until now, we have received reports only from LBM works and 97% reports were received through the app. Based upon our data, we predict that if 10 poultry die every day, the probability of detecting AIV in those birds is approximately 73.6%. Continuation of the study throughout the year will allow us to predict the prevalence of avian influenza in LBMs without any time lag.

Keywords: avian influenza; android app; poultry mortality

3.16. Empowering Women in San Diego, CA: The Chiara Project's Dashboard for Tackling Health Inequities in a Border Town

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Borders are more than just lines on a map; they are communities sharing geography and resources. Unfortunately, living near a border often means unequal access to essential services. This study highlights health challenges women face in the U.S.–Mexico border region, focusing on reproductive justice in San Diego County, CA. The Chiara Project addresses these issues with a dashboard system identifying injustices. Focusing on well-being, health, and healthcare access, the research examines how border proximity affects women's healthcare in San Diego County. Key indicators include the number of healthcare facilities, insurance coverage, financial and language barriers, and maternal health outcomes. Data is collected from the CDC, CalHHS Open Data Portal, and local health departments, and surveys are administered using Survey123. Analysis includes spatial distribution of facilities, insurance coverage rates, and impacts of financial and linguistic barriers through regression models, GIS mapping, and correlation studies. This research also explores if undocumented women avoid medical care due to deportation fears, empowering leaders and providers with data-driven insights.

Keywords: reproductive justice; healthcare access; health inequities; women's health; U.S.-Mexico border

3.17. Measuring the Gender Gap in Climate Change's Impact on Maternal Health; Scoping Review in the Framework of One Health

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Changes in the environment are increasingly influencing women's health, exacerbating Gender Gap (GG) inequalities. Addressing maternal health is critical to achieving Sustainable Global Health. This study examines tools for monitoring GG in maternal health within the One Health framework, considering climate change impacts. Globally, gender-specific indicators include the following: (i) Energy poverty, (ii) Health disparities, (iii) Climate-induced forced migrations, and (iv) Food insecurity. Reports such as "Gender and Climate Change: A Situation Diagnosis" highlight the need to evaluate GG amid climate adversities, and there are plenty of data available but there is no consensus on

specific tools. Proposed tools include EIGE's indicators (energy poverty, health disparities, forced migrations, participation in environmental organizations) and UN Women's gender-focused SDG indicators. These tools are essential for addressing GG in maternal health, ensuring women's and girls' needs are met in climate policies.

Keywords: gender gap; climate change; maternal health; inequality monitoring

3.18. NutriBot: A Smart Solution to Combat Malnutrition in Diverse Communities

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Malnutrition is a pressing issue, particularly in underserved communities. NutriBot, an innovative smart chatbot, addresses this by offering personalized nutritional and health guidance. Users enter details like age, weight, height, and location, and NutriBot, leveraging advanced technologies such as Retrieval-Augmented Generation and large language models pre-trained on AWS Sagemaker, provides tailored advice. NutriBot is designed with a culturally sensitive, child-friendly interface and incorporates interactive and image generation features to accommodate varying literacy levels. It also offers offline access for areas with limited connectivity. Recommending local, seasonal foods, the chatbot aids NGOs with community nutritional data, enhancing program planning and execution. To ensure accurate and relevant advice, NutriBot integrates data collected from reputable sources such as research papers, the World Health Organization (WHO) website, and medical journals. This data enrichment ensures that the advice provided is evidence-based and up-to-date.

Keywords: malnutrition; chatbot community

3.19. Addressing Women's Health and Safety: The Chiara Project's Dashboard for Identifying Injustices in US–Mexico Border Towns

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The Chiara Project addresses the challenges faced by women in US–Mexico border towns through an advanced interactive dashboard system like ESRI, focusing on San Diego, CA. This study examines two primary concerns: (i) mental health and (ii) human trafficking. Women in these areas face higher rates of depression, anxiety, and Post-Traumatic Stress Disorder due to stressors like migration and family separation. They are also disproportionately affected by sex trafficking, with nearly 50% of US trafficking cases involving Hispanic women. The project uses various indicators and GIS analysis to identify significant injustices, aiming to inform and empower community leaders, policymakers, and healthcare providers. The methodology includes statistical and spatial analyses, data sources, and an assessment of border security policies, proposing a novel approach to addressing gender-specific injustices at the border.

Keywords: women; health; trafficking

3.20. Study of the Effects of Climate Change on Emerging Pollutants in Drinking Water—INTERACT Project

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Endocrine disruption is a crucial research field in the study of metabolic disorders and oncological diseases, allowing for the identification of several endocrine disruptors (EDs). Humans can be exposed through occupational, environmental, and dietary exposures. However, many emerging pollutants still need to be assessed to understand their potential harm to human health and the environment. Climate change, with extreme events and droughts, particularly in Sicily, contaminates surface freshwater and groundwater, influencing the availability and quality of drinking water. The INTERACT project aims to monitor emerging pollutants such as salicylic acid, nonylphenol, bisphenol A (BPA), perfluoroalkyl substances (PFAs), 17-β estradiol, micro- and nanoplastics, and metallic nanoparticles to assess the quality of drinking water in Catania (Sicily, Italy). Currently, we are monitoring these contaminants to implement precautionary measures and minimize their emerging effects.

Keywords: climate change; endocrine disruptors; drinking water

3.21. Urban Blue Spaces and Public Health: Impacts of Algal Blooms and Benefits in the Context of Climate Change

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Rising temperatures due to climate change have led to an increased frequency of toxic algal blooms in coastal areas and freshwater bodies. Cyanotoxins produced by these blooms are linked to severe health effects, including dermatological issues, gastrointestinal disorders, and potential neurological impacts. Simultaneously, urban blue spaces provide numerous benefits, such as stress reduction, improved psychological well-being, and promotion of physical activity. In the context of climate change, it is crucial to promote the expansion of green and blue spaces in cities to enhance quality of life, improve overall health, and mitigate the impacts of climate change. However, it is equally essential to closely monitor algal blooms to protect public health, implementing effective preventive and control measures.

Keywords: blue spaces; human health; toxic algal blooms; climate change

3.22. A Geo-Spatial Data Processing Framework for Quantitative Assessment of Environmental Impact on Human Health

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WHO identifies the environment as one of the key factors affecting health, and climate change is progressively increasing the weight of this stressor. Along with long-term mitigation, the issue of short-term adaptation should also be addressed. To enforce public policymaking in this context, data-driven evidence is vital. However, the temporal and spatial dimension of data is rarely coherent, hindering an analytical approach. To cope with this, geo-spatial data processing techniques can be applied. In this study, an example implementation is presented, in order to enable the study of how the environment, in particular pollution and greenspaces, affects the population's health in a densely populated urban area (Milan metropolitan city, northern Italy). With the proposed data-processing framework, based on Geographic Information System technologies, it was possible to combine a manifold data-source and make it uniform in the spatial and temporal dimension, allowing a quantitative assessment of their relationship.

Keywords: health-geomatics; environmental health; data-driven evidence; geo-spatial data processing; public policy quantitative assessment

3.23. Eco-Anxiety, the Emotional Intelligence Increasing Resilience to Face Health Challenges Due to Climate Change

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Independent researcher

Science warns of the disasters coming due to the climate emergency. Among the impacts that stand out, the increase in eco-anxiety is especially relevant. This research delves into emotions with a gender perspective aroused by information about climate change, as well as the thoughts and behaviors that accompany them. Incorporating a new psychological perspective to the One Health framework can improve resilience in communities. Semi-structured interviews (N = 25) were conducted with the population of Spain. Significant differences were found in the variables: sex, income level, and age for different emotions, and in the commitment to behavioral change for the level of concern about climate change. The results obtained show trends confirming the findings of other research. The results also show that taking advantage of the information offered by emotions increases emotional intelligence and makes it easier to make smarter decisions in difficult situations.

Keywords: eco-anxiety; emotional intelligence; mental health; emotions

3.24. Monitoring the Health of Our Oceans: From the Sea Surface to the Seafloor

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There is indisputable evidence of the widespread and unabated effects of the ocean's wide-ranging supply chains on marine life in all its forms. Maritime industries like fisheries, seaports, shipping, offshore oil and gas, maritime manufacturing and construction, and tourism contribute massively to the global economy (USD 2.5 trillion/year) making the ocean the seventh largest economy worldwide, and constitute well-established engines of the blue economy. Nevertheless, this does not come without continuous ocean stressors and environmental impacts, such as loss or reduction in marine biodiversity, loss of ecosystem resilience, degradation of coastal and marine habitats, reduction in animal welfare, increased GHG concentrations, and changes to marine biological/chemical/geological cycles. The overarching research goal is to advance knowledge on the state of marine resources, which could affect the way in which future generations will interact with and use them. In this paper, we provide a methodological study to assess the impacts of human activities at sea and anthropogenic pollution on marine organisms along the water column and in the deep sea where most vulnerable marine creatures live, with a focus on Sardinian (Italy) marine and coastal resources. The analysis aims to provide comprehensive, harmonized information on complex human–ocean interactions to deepen understanding of the loopholes along ocean-based supply chains, existing constraints, and how principal industrial sectors contribute to/are affected by the mismanagement of marine resources (e.g., loss of access to sustainable sea-based livelihoods, economic damage, loss of productivity, mismatch in supply–demand mechanisms for sustainable seafood options, etc.).

Keywords: marine industry; ocean stressors; marine resources; human-ocean interaction; marine life

3.25. Impact of Environmental Microplastic Exposure on HepG2 Cells

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The rise in microplastic (MP) pollution presents a pressing environmental issue, raising concerns about its potential health impacts on human populations. Given the critical role of the liver in detoxification and metabolism, understanding the effects of MPs on human hepatoma cell line HepG2 cells is essential for comprehensively assessing dangers associated with MP pollution to human health. Until now, the assessment of the harmful impact of polyethylene (PE) and polyethylene terephthalate (PET) on HepG2 has been incomplete and lacks certain essential data points. In this particular setting, we examined several parameters such as cell viability, oxidative stress, and mtDNA integrity, mitochondrial membrane potential and autophagy in HepG2 cells exposed for 72 h to PET and PE. Our data revealed that exposure of HepG2 to MPs causes an increase in cell viability accompanied by a heightened ROS and altered mitochondrial function, as revealed by decreased mtDNA integrity and membrane potential. In addition, results demonstrated that exposure to PET and PE activated autophagic events, as suggested by the increased levels of the specific markers LC3 and p62. This last point was further confirmed using bafilomycin, a specific blocker that hinders the merging of autophagosomes and lysosomes, thereby blocking autophagic degradation processes. Our data should be carefully considered given the increasing evidence of food chain MP contamination and its possible harmful effects.

Keywords: bafilomycin A1; PET; PE; hepatocellular carcinoma cell line; macrautophagy; mitophagy

3.26. GIS for Community Health

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This paper explores the GIS for Community Health program by People Not Pozos and Esperanza Community Housing. It highlights the necessity of community-led collaborations in combating climate injustice. The program integrates GIS technology, environmental health, and policy expertise to support community-driven initiatives against urban oil drilling. It involves Promotoras, youth, and academics working together to change policies, particularly aiming to ban oil drilling in residential areas due to health impacts from air pollution. The paper shares stories of how these collaborations have empowered community members, advanced climate justice, and inspired further campaigns against environmental racism.

Keywords: community health; climate justice; promotoras

3.27. Cholera Outbreak and Its Transmission Risk Factors in Mwanza Region Tanzania—What Lessons Can We Learn from a Matched Case–Control Study

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Cholera is an acute diarrhea disease caused by Vibrio Cholerae. It is transmitted by eating or drinking contaminated food or water. Mwanza, like other regions in Tanzania, reported cases of cholera and hence an outbreak in early January 2024. A matched case–control study was conducted in three districts that were first affected by cholera. A total of 168 participants were recruited, 56 were cases and 112 were the control. Individuals who had primary and secondary education were likely to be protected from cholera as compared to those who never attended school. Eating away from home was significantly associated with contracting cholera. Having contact with a cholera case increased the risk of contracting cholera 29 times. Individuals who received health education on diarrheal diseases before outbreak occurred were protected from contracting cholera. Partnership and collaborations on conducting public health education, availability of safe water systems and proper waste disposal are essential to minimize cholera contraction.

Keywords: cholera transmission; health education protection; public health collaboration

3.28. Health and Lifestyle Survey in the UOC University Community

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Dietary habits have a direct impact not only on people's health but also on the health of the planet. To employ strategies to promote health and sustainable diets, it is necessary to know the behavioral profiles of the population. This study aimed to analyze the different individual and contextual factors related to health among a virtual university community. A sample of 2113 students and 538 university staff answered a self-administered questionnaire, in which we characterized sustainable dietary profiles linked with physical activity and emotional well-being. The use of descriptive statistics and predictive models showed overall low adherence to Mediterranean and other plant-based diets. Our model included predictors that associated this low adherence with (i) poor sleep quality, (ii) low physical activity level, and (iii) higher consumption of pre-cooked and fast food. Universities have the potential to become environments that encourage healthy and sustainable lifestyles, bridging the gap between knowledge and practice.

Keywords: nutrition; university; sustainability

3.29. From Sea to Plate: The Plastic Pollution Problem in the Food Chain, a Review

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The rising concern for plastic pollution does not only consider pollution in the marine habitat and the terrestrial habitat, but also for the marine and terrestrial organisms—including humans. Not only do plastic bags and bottles have great effects themselves, but they can decompose to even smaller plastics known as microplastics and nanoplastics. Microplastics are smaller than 0.5 mm while nanoplastics are 1–1000 nm. These plastics can be Polyvinyl chloride (PVC), Polyethylene (PET), acrylonitrile butadiene styrene (ABS), Polymethyl methacrylate (PMMA), Polypropylene (PP) and many more. The results of plastic pollution can ultimately end up on the plates of humans through seafood. This plastic travels through different trophic levels from zooplankton to small fish to bigger fish to humans. Plastic can create numerous problems that disrupt the human body such as oxidative stress and reproductive problems. An abundant amount of research has been performed that follows the life of plastic from pollution in waters to the transfer between trophic levels. The fate of human health relies on these studies as they examine the problems that plastic pollution causes within an entire ecosystem. Further research should be studied on the long-term effects of plastic pollution within humans due to the pollution increasing greatly over the years.

Keywords: plastic pollution; trophic transfer; microplastics; health; food chain

3.30. One Health Referral Practice and Its Implication on Rabies Vaccination Compliance

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Rabies is a vaccine-preventable zoonotic disease with a case-fatality rate of almost 100%. Globally, around 29 million people receive post-exposure prophylaxis against rabies every year. However, limited rabies vaccine uptake remains an obstacle to disease control among rabies endemic countries. The aim of this study was to assess the rabies vaccine uptake and its determinants among patients treated at the Korle-Bu Teaching Hospital in Accra, Ghana. Methods: A retrospective longitudinal study was carried out by utilizing hospital rabies exposure data (2017 and 2022). Additional information on the fate of the offending animal, availability of other victims and visits to veterinary clinics were collected by contacting bite victims. Logistic regression analyses were carried out to assess the degree of association between identified predictors and compliance using STATA 18. Findings: A total of 446 vaccine recipients were identified, median age 23 (1–86) years. Most patients were from non-slum areas and located within a median travel distance of 4.9 (0.86–209.5) km. Majority of the reported rabies exposures were attributed to dogs (93.5%). The overall vaccination completion rate among patients was 68.2%, 75.5% for 4-dose Essen regimen and 66% for 5-dose Essen regimen. The odds of compliance were lower for patients receiving a 5-dose regimen (OR 0.63; CI 0.38 to 1.0). One Health referral practice increased the odds of treatment compliance by 2.31 times (OR 2.31; CI 1.05 to 5.07). The overall compliance rate among rabies vaccine recipients was low in the study area. Disparity in rabies vaccine coverage between slum and non-slum areas was found. Formalizing the use of abridged vaccination regimen and referral practice between hospital and veterinary clinic could potentially promote vaccine uptake and assist in reduction in human rabies. Transition to a non-presential and e-referral system could prevent unnecessary patient visits to veterinary clinics and promote treatment compliance while facilitating information sharing between the veterinary and public health surveillance system.

Keywords: health equity; outbreak response; surveillance; vaccination coverage zoonotic disease

3.31. MP Levels in Intestinal Biopsies of Subjects Diagnosed with Colorectal Cancer, Comparison Between the Healthy and Diseased Part: Preliminary Results

Margherita Ferrante [1], Antonio Magnano [2], Anton Giulio Judica [2], Concetta Ferracane [2], Gaetano Inserra [3], Gaetano Magro [4], Lucia Salvatorelli [4], Eloise Pulvirenti [1], Valentina Maria Longo [1], Alfina Grasso [1], Antonio Cristaldi [1], Chiara Copat [1], Gea Oliveri Conti [1] and Maria Fiore [1]

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Colorectal cancer (CRC) is the third most commonly diagnosed cancer and the second leading cause of cancer-death worldwide. It is strongly associated with different risk factors. Microplastics (MPs) seems to act on the inflammatory process. The aim of the study was to investigate the levels of MPs in intestinal biopsies of subjects diagnosed with CRC by comparing the healthy part with the diseased part as well as comparing the healthy part levels of MPs with their levels in biopsies of healthy subjects. A patented method and SEM-EDX analysis were applied to identify MPs. A sample of subjects (females 50%) diagnosed with CRC were recruited at the Gastroenterology Unit of the "G. Rodolico-San Marco" Polyclinic in Catania. The healthy part had higher median (IQR) levels of MPs than the diseased part [19,135 p/g (11,332–78,621) vs. 7236 (1757–219,218)]. The control had higher levels of MPs than cases [515,336 p/g (0–755,826) vs. 19,135 (11,332–78,621)].

Keywords: colorectal cancer biopsy; microplastics

3.32. Relationship Between Eating Habits, Ulcerative Colitis and Exposure to Microplastics: Case–Control Study Preliminary Results

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Ulcerative Colitis (UC) is characterized by gastrointestinal tract chronic inflammation in genetically susceptible individuals exposed to environmental risk factors. A systematic review seems to support the relationship between microplastics (MPs) and the inflammatory process. The aim of this study was to investigate the relationship between eating habits, UC and exposure to MPs. A patented method and SEM-EDX analysis were applied to identify MPs. A sample of subjects (females 40%) diagnosed with UC were recruited at the Gastroenterology Unit of the "G. Rodolico-San Marco" Polyclinic in Catania. The frequency of smoking was higher among cases. Control had higher blood median (IQR) levels of MPs than cases [5755 p/g (2488–9042) vs. 3233 (0–5242)], and smaller diameter [3.9 μm (3.4–4.5) vs. 4.2 (1.0–5.5)]. No correlation has been highlighted between adherence to the Mediterranean diet and blood levels of microplastics (Rho: −0.06, $p = 0.74$). Both cases and controls mostly consumed plastic bottled water (80.0% vs. 86.7%) and more than 50% consumed bagged foods.

Keywords: ulcerative colitis inflammatory diseases IBS microplastics

3.33. Analysis of the Effects of War on Climate and Ecosystem: A Systematic Review

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War can have a significant impact on climate change and ecosystems, but quantifying this precisely is complex. Therefore, this study aimed to conduct a systematic review to elucidate the complex impact of armed conflicts on climate change and ecosystems. Materials and methods: PRISMA procedures were followed to conduct an exhaustive search of the scientific literature on PubMed, Web of Science, and Scopus, selecting articles published from 2000 to 2024. Results: The nine studies included in our review showed a worrying pattern of environmental degradation associated with armed conflict, characterized by deforestation, negative impacts on agriculture, increased risk of extreme weather events and of greenhouse gas emissions, and deterioration of air quality. Conclusions: The study highlighted the broad impact of armed conflicts on the environment, climate change and society. It is essential to design a unified and sustainable policy to avoid war, limit climate damage and promote peace.

Keywords: war and climate change; war and climate change; impact armed conflict and climate change

3.34. GIS-Based Assessment of Urban Areas' Resilience to Climate Change: Focusing on Child and Maternal Health

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During climate change events, Child and Maternal Health is closely linked to the resilience of the environment in which one lives. In urban areas of the Mediterranean, climatic risks are often attributable to heat waves and intense rainfall, with direct and indirect effects on health. The objective of the research was to develop a methodology based on the overlay of GIS-based thematic maps (pediatric population density, Urban Heat Island, green areas, etc.) capable of identifying the most resilient and most at-risk areas (Vulnerability x Exposure). This methodology was applied to Milan, identifying areas where intervention would be most urgent.

Keywords: climate change risks; urban contest; health children; resilience; GIS data; risk maps

3.35. Why Do Women Stop Breastfeeding Under 6 Months of Baby Age in Occupied Palestine?

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The aim of the study is to explore the reasons why Palestinian mothers stop breastfeeding (BF) before six months of babyhood. A cross-sectional study was conducted in Hebron/Palestine that included mothers of all 420 live singleton newborns in the period between 1 January 2022 and 31 July 2022 in the main hospital. Mothers who did not initiate breastfeeding or continued to breastfeed, either exclusively or with supplementation, were excluded. Information about BF status at 6 months of age and reasons for stopping BF was collected by public health doctors and midwives through face-to-face interviews when women visit the clinic for 6-month baby vaccination and family planning consult. Of all the 420 participant mothers, 300 stopped breastfeeding completely before six months of babyhood; among them, only 281 gave an obvious reason for stopping breastfeeding, such

as scanty milk production (28%), child weaning himself/herself (30%), returning to work (33%), fatigue and painful nipples (18%), mother preference (8%), and medical advice of formula (15%). This study highlights the reasons why women stop breastfeeding completely before six months. The results may help in identifying interventions for a prolonged breastfeeding period.

Keywords: breast feeding; childhood; Palestine

3.36. Perception of Newly Graduated Medical Doctors in Palestine Towards Family Medicine Specialty

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A number of challenges face the family medicine (FM) specialty since it is still confusing, not well-understood and relatively new in Palestine. To evaluate the level of perceptions of the newly graduated medical doctors about FM, identify the socio-demographic and academic factors that may be associated with the perception of FM, and explore the choices of the future specialty of the newly graduated medical doctor in Palestine, a cross-sectional study was conducted in Palestine using a self-administered questionnaire in English composed of the socio-demographic part, awareness and perception of FM part and questions about the medical schools' FM rotation. The study included 185 newly graduated doctors, the majority of whom (57.3%) were 25–28 years of age. More than half of the doctors (57.3%) were male and almost half of them (47%) graduated from Palestinian medical schools. Almost 20% of them have at least one parent who is a physician. It is noticed that 48.6% of participants were enrolled in FM rotation at a medical school with a mean period of 3.25 weeks. There was no association between the background issues and the perception. The majority of participants' perception (75.1%) of FM was at a medium level and 23.2% have a high level of perception. The majority of the newly graduated doctors (83.8%) agreed that people in our community do not know what FM is. A total of 81.1% agreed that it is a low-valued profession in society, and (50.8%) agreed that it is difficult to become a good FM doctor, because it is large field. The interest of the participants in FM as a future specialty was approximately 38.4%; the highest was, in general, in surgery (45.9%) and the lowest in anesthesia (20.5%). Salary was the main concern in choosing the career (89.7%), and prestige and working time also seem to be important. FM perception is at an intermediate level but there are still some negative points towards FM which should be corrected and resolved; academic factors play no role in the perception level nor do the socio-demographic. Interest in FM as a future specialty is approximately 38.4%.

Keywords: perception; newly graduated; doctors; family medicine; Palestine

3.37. Low-Tech Maternal and Child Healthcare Facilities in Developing Areas

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Due to climate change, the Mediterranean area is becoming increasingly warm and with climates similar to those of tropical regions. This corresponds to a change in the framework of health and epidemiological needs, as well as in architecture, with respect to resilience to high temperatures. For this reason, the study delves into the sustainable design strategies, used for pediatric and maternal–infant hospitals situated in hot climate regions, highlighting replicable and scalable strategies. The Health and Social analyses highlight the vulnerability of the maternal–infant demographic and demonstrate how design solutions can mitigate climate-related risks and improve health outcomes. The research shows the

important role of hospital design and provides valuable insights into the intersection of architecture, climate and health, showcasing how specific architectural strategies can create a safe, healthy and effective healthcare environment in hot climate regions.

Keywords: sustainable architecture; health facilities; maternal health; pediatric health; climate change; hospital children; health; healthcare; sustainable climate; developing countries

3.38. Walkability as a Strategy to Mitigate Climate Change and Make Cities More Resilient: An Evaluation Tool for Urban Contest

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One of the main strategies for cities' resilience to climate change is vehicular traffic reduction, due to the active mobility promotion; direct impact on Public Health is crucial, causing physical activity promotion. The paper presents three experiences of the application of the Milano Walkability Measurement (MWM) tool in different cities: Milan (Italy), Berlin (Germany), Dublin (Ireland) and Tbilisi (Georgia). The MWM tool is divided into the Macro dimension (i.e., Density, Diversity, and Design criteria) that refers to the urban scale and examines the city from a top view. It quantitatively describes the overall urban factors (urban area size equal to 1.5 Km^2; typology of data: archival). The Micro dimension (i.e., Usefulness, Safety, Comfort, and Aesthetics criteria) investigates the city at the street scale level. It qualitatively describes features of the outdoor spaces (road length of about 500/700 mt; typology of data: observational). The assessment is useful both to policymakers, to make evidence-based specific choices, and to designers, to understand what aspects of the urban environment must be improved or implemented in order to promote a walkable city.

Keywords: walkability; evaluation tool; urban environment; urban health; climate change

3.39. How Can the Inner Development Goals Add Value and Strength to a Laboratory Carbon Footprint Assessment?

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This work demonstrates that taking action fosters hope and seeks to transform the academic environment by cultivating a culture of responsibility and collaboration among laboratory users. It proposes replacing competition with a community focused on human values. By integrating University College London's Laboratory Efficiency Assessment Framework (LEAF) with Inner Development Goals (IDGs), the research promotes accountability in resource consumption and waste management, enhancing the environmental impact of scientific research. LEAF's carbon footprint assessments and the IDGs aim to empower users to adopt mindful practices, fostering a sustainable research community. The project encourages a shift from competition for resources to a meaningful, fulfilling research community, fostering happiness and reducing the carbon footprint through mindful practices. It explores the connection between nature and human actions, applying the concept of "entanglement" from quantum physics to emphasize the interdependence of individuals' actions. The holistic approach involves aligning with the inner selves to effect positive changes externally. Practical recommendations for a collaborative and respectful laboratory environment are based on interviews, observations, documented research, and personal experiences during 2023. They support the holistic approach of integrating IDGs within LEAF to observe behavioral changes and emphasize the need for transformative environmental consciousness.

Keywords: carbon-footprint; human-handprint; SDGs behavior consciousness

3.40. Integrating Traditional Knowledge and Indigenous Practices for Health and Well-Being in Namibia and Africa

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Traditional knowledge and indigenous practices play a pivotal role in promoting health and well-being in Namibia and across Africa. These practices, rooted in centuries-old cultural heritage, encompass a wide array of medicinal plants, healing rituals, and community-based health strategies. In Namibia, traditional healers and herbalists utilize local flora to treat ailments, offering accessible and culturally relevant healthcare solutions. Indigenous practices also emphasize holistic well-being, integrating physical, mental, and spiritual health. This abstract explores the significance of traditional knowledge in enhancing healthcare delivery, preserving biodiversity, and fostering community resilience. It highlights the potential of integrating these practices with modern healthcare systems to create sustainable and inclusive health strategies. By acknowledging and respecting traditional knowledge, there is an opportunity to bridge gaps in healthcare access and promote a more comprehensive approach to health and well-being in Namibia and the broader African context.

Keywords: traditional knowledge; indigenous practices; health and well being; Namibia; Africa

3.41. Mapping Public Sentiment: A Data-Driven Analysis of COVID-19 Discourse on Social Media in Italy

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This study provides a detailed analysis of COVID-19-related social media discourse in Italy, using 535,886 tweets from 10 major cities between 30 August 2020 and 8 June 2021. The tweets were translated from Italian to English for analysis. A multi-faceted methodology was employed: Latent Dirichlet Allocation (LDA) identified 20 key themes; sentiment analysis, using TextBlob, Flair, and TweetNLP, and emotion recognition using TweetNLP, revealed the emotional tone of the discourse, with 453 tweets unanimously positive across all algorithms. TextBlob was used for lexical analysis to rank the most salient positive and negative terms. Results indicated that positive sentiments centered on hope, safety measures, and vaccination progress, while negative sentiments focused on fear, death, and quarantine frustrations. This research offers valuable insights for public health officials, enabling tailored messaging, real-time strategy monitoring, and agile policymaking during the pandemic, with implications for future health crises

Keywords: COVID-19 social media analysis; sentiment analysis; topic modeling; public health communication; Italian Twitter discourse

3.42. Partnering to Advance Community Resilience: Educating Youth Using a One Health Lens

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The health of communities and the environment is threatened by interconnected and complex issues—climate change. Within our communities, children are often at higher risk of health impacts from climate change because of their time spent outside, physical and emotional development stage, and dependence on adults for their well-being and safety. These challenges cross borders and require interdisciplinary approaches, education, and collaboration on local and global levels to tackle. One example of a collaboration

to advance community resilience is between the United States Environmental Protection Agency and the Peace Corps. This partnership aims to strengthen local collaborations and increase understanding of environmental challenges and their One Health implications through educational pilot workshops for Peace Corps Volunteers and their local hosts and partners. Anticipated workshops will educate the educators to better prepare youth for global challenges such as climate change and empower them to make a difference.

Keywords: community resilience; partnership building; youth engagement One Health lens; climate change

3.43. Evaluating "Leave No One Behind" SDG Indicators for Addressing Women's Injustices at the US–Mexico and Mediterranean Border

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This study evaluates and measures the "Leave No One Behind" indicators from the United Nations Sustainable Development Goals in 2020 to identify hotspots of environmental, social, and economic injustices faced by women in San Diego County, USA, Tijuana, Mexico, and Lampedusa, Italy border. By employing advanced data analytics and geospatial techniques, we aim to highlight disparities and vulnerabilities affecting women in this cross-border region. Our research focuses on critical areas such as access to healthcare, education, economic opportunities, and environmental safety. The findings will inform targeted interventions and policy recommendations to enhance support for women, ensuring that no one is left behind in the pursuit of sustainable development. This study advocates for the empowerment of women living in this bi-national context, emphasizing the need for collaborative efforts to address these pressing issues effectively.

Keywords: women; leave no one behind; health; US-Mexico border; Lampedusa; Italy; SDGs

3.44. Working Together Against Vectors as a Measure of Adaptation to Climate Change in Navarre (Spain)

Miguel Ángel González-Moreno [1], Miguel Domench-Guembe [2], Teresa Ferrer-Gimeno [2], Isaías Baustista-Sanz [1], Itziar Almarcegui-Artieda [1], Estrella Miqueleiz-Autor [2] and Joel Dozzi [3]

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Vector-borne diseases is a health issue that, as a consequence of climate change, is getting worse in several areas of Europe. In Navarre (north of Spain), in the mid-2010s, a group of professionals began to work on their own on the surveillance of some vectors, gathering information and sharing knowledge. Thanks to the integrated European project LIFE-IP NAdapta-CC (2017–2025) that includes vector surveillance, a working group was created in 2020 under the name "Crosscutting Technical Group (CTG) on Vectors". Its main activity is to strengthen coordination in order to monitor and improve public health protocols related to the presence of invasive vectors that transmit emerging diseases, such as mosquitoes or ticks. The benefit of the vectors' CTG is to share knowledge and data, to make better use of public resources and to put together different points of view at a technical level. Since then, this activity contributes to provide a vision of "One health" to different regional agents, not only to the project partners but also to public administrations and other professional bodies. Currently, the Institute of Public and Occupational Health of

Navarre (ISPLN) aims to formalize CTG on vectors within its organization and to provide it with tools, skills and resources. This will allow us to continue the work promoted mainly by the LIFE-IP NAdapta-CC project and other complementary actions.

Keywords: aedes albopictus; vector-borne diseases; one health

3.45. Citizen Science Experiences Against the Tiger Mosquito in High Schools of Navarre (Spain)

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Climate change is a global issue the consequences of which must be addressed at a regional and local level. In Navarre (north of Spain), the Navarre Climate Change Roadmap (KLINa) is being implemented and covers both mitigation and adaptation measures. Thanks to the integrated LIFE-IP NAdapta-CC project [2017–2025], the majority of adaptation measures are under development. One of the project's actions, within the health work package, tackles the presence of invasive vectors of human diseases, such as the tiger mosquito. In order to achieve comprehensive management of vectors' surveillance and control of the diseases they transmit, in addition to the action of the public administration, the involvement of citizens is necessary. For this reason, as a complementary action with respect to the LIFE-IP NAdapta-CC project, a citizen science activity has been started with educational centers of the Sustainable Schools Network of Navarre. The latter has been working for several years on environmental education issues with students under the authority of the Education Department of the Government of Navarre. Training and awareness of students and teachers, as well as their collaboration in the placement of mosquito traps in their schools allow for the dissemination and exchange of knowledge, raising awareness on new emerging risks and expanding the sampling network. It also fosters technical and transversal skills of the school curriculum in students and brings the science and professional world closer to the educational field. Thanks to this activity, several tiger mosquitoes have been detected in areas that were not being monitored previously, since there was no evidence of their presence.

Keywords: aedes albopictus; vector-borne diseases; non-native species

3.46. One Health Awareness in Young Learners: An Outdoor Workshop Intervention

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To cultivate a One Health mindset in young learners, a pilot intervention was conducted in Marrakech, Morocco. Public health professionals facilitated three outdoor workshops titled "My One Health Day: A Quest for Wellbeing" for 90 learners from kindergarten to fifth-grade students. Held in a nature park, these workshops integrated theoretical knowledge about One Health, physical activity, and reflective practices. Participants explored the interconnectedness of human, animal, and environmental health through group discussions, breathing exercises, and nature walks that included animal and plant identification within their natural habitats. Active teachers' participation enabled the integration of learning into school curricula. Evaluation results demonstrated high participant satisfaction and a strong understanding of the One Health concept. The workshops effectively promoted

health-promoting schools and emphasized the importance of nature, animals, and environmental conservation. This study highlights the potential of outdoor, experiential learning for fostering One Health awareness in young learners.

Keywords: one health; schools; education; health promotion

3.47. Stroke Risk and Outcomes in the Age of Climate Change: A Narrative Review

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Climate change (CC) is increasingly recognized as a significant determinant of stroke risk and outcomes. Extreme temperatures are associated with increased stroke incidence and mortality, with a 1 °C rise in average daily temperature correlating with a 1–2% increase in ischemic stroke incidence. Mechanisms include cardiovascular stress and inflammatory responses to extreme temperatures. CC worsens air pollution, a notable stroke risk factor, with higher PM2.5 and carbon dioxide levels linked to elevated age-standardized mortality rates for stroke. Geographical variability is evident: countries with a low-to-middle Socio-Demographic Index face a higher stroke burden. Low-income countries experience disproportionate heat-related hemorrhagic stroke mortality. As CC progresses, the burden of stroke due to high temperatures is expected to rise. Addressing this issue requires indoor and outdoor temperature control strategies and reducing exposures during extreme weather. The challenge is for policymakers to recognize and commit to ecological responsibility and enhance healthcare accessibility, especially in low-income regions.

Keywords: climate change; stroke; air pollution; cardiovascular stress; extreme weather; healthcare accessibility

3.48. Impact of Climate Variability in Chronic Pain and Fibromyalgia: A Narrative Review

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Chronic pain (CP) conditions, including fibromyalgia (FM), significantly impact global health, quality of life, and healthcare resources. While pain etiology is multifactorial, emerging evidence suggests climate variability may modulate pain symptomatology in susceptible patients, a phenomenon described as meteorosensitivity or meteoropathy. Epidemiological studies have identified associations between meteorological parameters and reported pain intensity. Perceived unpleasantness and elevated pain intensity may correlate with decreased barometric pressure, increased relative humidity, higher precipitation, and enhanced wind speeds. CP patients report weather sensitivity, particularly to cold and damp conditions. In FM patients, weather sensitivity is associated with reduced quality-of-life. However, some studies have not demonstrated compelling evidence for weather-related changes in FM, except for fatigue. The physiological mechanisms underlying these associations remain incompletely elucidated; proposed mechanisms include biomechanical vascular or articular dysfunction or alterations in CNS regulation of responses to meteorological changes. Further research is warranted to elucidate these relationships and their clinical significance.

Keywords: pain, chronic pain; fibromyalgia; climate variability; weather changes meteorosensitivity; meteoropathy

3.49. Enhancing Food Security in North Africa: A Sustainability Reporting Framework

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North Africa's food security is increasingly threatened by climate change, characterized by prolonged droughts, extreme temperatures, soil degradation, and declining agricultural productivity. These challenges are exacerbated by socio-economic vulnerabilities and emerging health crises, such as Mpox. This research introduces a Sustainability Reporting Framework as a tool for enhancing food security through transparency, accountability, and resilience. The framework is based on assessing agricultural vulnerabilities, defining clear outcomes for institutional capacity-building, and developing action plans that integrate advanced monitoring technologies, climate-smart agriculture, and stakeholder collaboration. The sustainability reporting process provides a mechanism for tracking progress, identifying gaps, and fostering trust among governments, communities, and investors. Regular reporting not only promotes accountability but also ensures adaptive management of food systems, allowing for timely responses to evolving environmental and health crises. This research underscores the need for integrated policies that address climate risks and food security while enhancing North Africa's institutional readiness for future challenges.

Keywords: food-security; sustainability-reporting; institutional-capacity

3.50. A Global Imperative: Risk Mitigation Through One Health Education to Combat Climate Change and Prevent Zoonotic Pandemics

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The COVID-19 pandemic, coupled with the recognition by the Quadripartite agencies and the G7 governments of the urgency to address the impact of diseases of animal origins on human health, has catalyzed the adoption of the One Health framework in policy development geared at preventing future pandemics. Recent studies performed at the live markets in China have identified raccoon dogs as the most likely reservoir for the SARS-CoV-2 virus, responsible for the COVID-19 pandemic. Ebola, Highly Pathogenic Avian Influenza (now emerging in cattle), and Malaria are emerging diseases that have their origins in animal reservoirs with human activities such as logging and deforestation, bringing wildlife reservoirs of disease into closer contact with urban populations. The Intergovernmental Panel on Climate Change (IPCC) Assessment Report, released in 2022, discussed the impacts of climate change on the emergence of infectious diseases and its implications for human health. Importantly, global warming has led to the expansion of vector-borne diseases (dengue, Oropouche virus), triggered natural disasters leading to habitat displacement of humans and animals and, with this, the global migration of zoonotic pathogens of animal origins. The subsequent effects of climatic change on water scarcity and air pollution have led to food insecurity and respiratory and cardiovascular disease in humans and animals. Global warming continues to lead to the devastation of marine biodiversity, threatening food safety, food security and the livelihood of many that are dependent on the blue economy. The World Health Organization (WHO) states that climate change is the world's most significant public health threat. How well universal health systems mitigate these impacts will be determined by how well the health risks of animals, humans, and the environment are addressed. One Health provides a conceptual framework that can support the achievement of the UN Sustainable Development Goal agenda towards optimal health for all species and the planetary environment in which they

co-exist. This presentation will propose a call to action for educators to create Interprofessional Education (IPE) pedagogical platforms, preparing future health professionals as medicinal chemists, artificial intelligence modeling experts, veterinarians, environmental health workers, pharmacists, and physicians to collaboratively address threats to human health, animal health and ultimately planetary health, through the lens of One Health, One Medicine.

Keywords: one health; education; veterinary medicine; interprofessional; climate change risk mitigation

Conflicts of Interest: The authors declare no conflicts of interest.

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