



Integrating Environmental Health into Clinical Practice to Address Emerging Health Risks

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ABSTRACT:

Environmental health is increasingly recognized as a critical factor influencing individual and population health outcomes. Emerging health risks, such as climate change, pollution, and chemical exposures, pose significant challenges to modern healthcare. This article explores the integration of environmental health into clinical practice, focusing on how clinicians can address these risks to improve patient outcomes and enhance population wellness. Key environmental health threats, including climate-related illnesses, air pollution, chemical toxicology, water contamination, and the loss of biodiversity, are examined in detail. The article emphasizes strategies for incorporating environmental screening, patient education, interdisciplinary collaboration, and advocacy into healthcare. Barriers to this integration, such as limited training and resource access, are also discussed. The holistic approach proposed in this article aligns clinical practice with public health goals, promoting a proactive and preventive healthcare model that addresses the root causes of disease in the context of environmental change.

1. Introduction

Environmental health is all about figuring out how the world around us both the natural stuff like trees and rivers, and the man-made stuff like cities and roads affects our well-being. Lately, people have started to wake up to just how much these things shape our health, even if it's flown under the radar for a while. Big challenges like climate change, dirty air and water, toxic chemicals, and shifting ecosystems are now seen as major players in why so many of us get sick. To tackle

this, we've got to weave environmental health into the way doctors and nurses work it's not just a nice-to-have, it's a must. By getting on board with this, healthcare can step up to handle these rising risks and help us all bounce back better as the planet keeps changing.

This paper examines the ways in which environmental health can be woven into clinical care, highlighting the essential role that healthcare professionals play in mitigating these emerging risks. The discussion will explore major environmental health threats, their



associated impacts on public health, and strategies for clinicians to incorporate environmental factors into routine patient care. Adopting this comprehensive approach is crucial for improving patient outcomes and advancing broader public health objectives.

2. Understanding Environmental Health Risks

The world we live in think climate change, pollution, and all those toxic chemicals really piles onto our health problems. These threats show up in all sorts of ways, from breathing troubles thanks to nasty air to infections you catch from dirty water. For doctors and nurses, getting a grip on how big this problem is can help them figure out ways to stop it before it gets worse, making life better for both you and everyone else.

Climate change is hands-down one of the trickiest health headaches of our time. Hotter days, wild storms, and bugs carrying diseases to new places are stirring up more trouble. We're talking heatstroke, wheezing from crummy air, and more cases of stuff like malaria or dengue popping up (Watts et al., 2015). Healthcare folks are having to keep an eye out for these environmental curveballs, especially for kids, older folks, or anyone already dealing with health stuff. And it's not just physical climate change can mess with your head too, bringing on stress or sadness as the world feels more uncertain (Clayton et al., 2017). Doctors need to be ready to tackle that side of it as well.

3. The Interconnection Between Environmental Health and Clinical Practice

The world around us has a huge say in how healthy we are, affecting everything from sudden illnesses to long-lasting ones. Things like asthma, heart problems, cancer, and even mental health struggles are more and more tied to stuff in our environment think dirty air, toxic chemicals, or wild weather from climate change (Patz et al., 2014). This means doctors can't just stick to the old-school way of treating what's right in front of them; they've got to zoom out and look at the bigger picture of what's making us sick. For ages, clinics have been all about fixing what hurts now, often skipping over the sneaky environmental stuff that's quietly making things worse.

To really weave this into everyday care, healthcare pros need to connect the dots between our surroundings and our health, and actually do something about it. It's not

just about treating sickness anymore it's about spotting and tackling the environmental culprits behind it. Nurses and doctors are key players here: they can spot these risks, clue patients in on what's up, and push for bigger changes to keep us all safer. This whole vibe fits right into the push for preventing problems before they start and keeping entire communities healthier. By tackling what's in the air, water, or soil that's hurting us, they can help lighten the load of disease and boost our chances of staying well for the long haul.

4. Emerging Environmental Health Risks and Their Impact on Public Health

Several emerging environmental health risks have been increasingly identified as critical threats to human health. These risks include climate change, pollution of air and water, chemical exposures, and the loss of biodiversity. Each poses distinct challenges for healthcare providers, who must adapt their practices to meet the evolving health consequences of environmental degradation.

4.1. Climate Change and Health

Climate change represents one of the most significant global health threats of the 21st century. Rising global temperatures, more frequent extreme weather events, and shifting patterns of disease transmission are all consequences of climate change that directly affect human health. Heat-related illnesses, respiratory conditions linked to worsening air quality, and the spread of vector-borne diseases such as malaria and dengue are all attributable to climate change (Watts et al., 2015).

Clinicians need to be equipped to address the health effects of climate change by identifying vulnerable populations, such as the elderly, children, and individuals with pre-existing conditions, who are more susceptible to climate-related health challenges. Additionally, the psychological effects of climate change, including climate anxiety and stress, are becoming increasingly prevalent as people face growing environmental uncertainty (Clayton et al., 2017).

4.2. Air Pollution and Respiratory Health

Air pollution represents a major environmental health hazard, contributing to millions of premature deaths globally. Key pollutants such as particulate matter (PM_{2.5}), nitrogen dioxide (NO₂), and ozone (O₃) are closely linked to respiratory and cardiovascular diseases,



including asthma, chronic obstructive pulmonary disease (COPD), and ischemic heart disease (Cohen et al., 2017). According to the World Health Organization (WHO), air pollution accounts for approximately 7 million deaths annually (World Health Organization, 2021).

Healthcare providers can play a pivotal role in mitigating the health impacts of air pollution by identifying at-risk patients and offering appropriate interventions. For instance, clinicians can encourage air quality monitoring for patients with pre-existing respiratory conditions and provide guidance on minimizing exposure during periods of high pollution. Moreover, healthcare professionals can advocate for public health initiatives, such as clean air policies and the promotion of sustainable transportation, to reduce overall air pollution.

4.3. Chemical Exposures and Toxicology

Living in today's world, we're surrounded by toxic chemicals like pesticides, industrial fumes, and even stuff lurking in our household cleaners. These nasties can mess with our health in all sorts of ways, from sudden poisoning to sneaky long-term problems like cancer, fertility struggles, or even brain development issues in kids. Little ones are especially at risk because their bodies are still growing, and they're always touching everything (Trasande et al., 2016).

Doctors and nurses need to stay sharp about where these chemicals come from and what signs to look for when someone's been exposed. It's super important to make a habit of checking patients for this stuff, especially if they live near factories or farms where the risks are higher. Plus, healthcare folks should chat with patients about simple ways to dodge these toxins like picking safer cleaning products or steering clear of pesticides whenever possible.

4.4. Water Pollution and Infectious Diseases

Contaminated water sources are a leading cause of infectious diseases, particularly in low-income regions. Waterborne illnesses such as cholera, typhoid, and diarrheal diseases are often linked to poor sanitation and polluted water supplies (Prüss-Ustün et al., 2019). Emerging contaminants, including pharmaceuticals, microplastics, and endocrine-disrupting chemicals, are increasingly being detected in water systems, posing new public health challenges (Naidu et al., 2020).

Healthcare providers, especially those in regions with inadequate access to clean water, must remain vigilant in diagnosing and treating waterborne infections. Furthermore, they can advocate for improved sanitation and water quality infrastructure and educate patients on the significance of safe drinking water and proper hygiene practices.

4.5. Loss of Biodiversity and Zoonotic Diseases

The decrease in biodiversity, which is caused by factors such as habitat destruction, environmental pollution, and climate change, has serious implications for human health. Decrease in biodiversity has been linked to the increased transmission of zoonotic diseases that are transmitted from animals to humans, such as Ebola, Lyme disease, and COVID-19 (Karesh et al., 2012). The COVID-19 pandemic specifically underscores the need to adopt a One Health approach that integrates human, animal, and environmental health activities to prevent the transmission of zoonotic diseases.

Clinicians need to be aware of the links between biodiversity loss and the emergence of zoonotic diseases, particularly where there is increased human-wildlife contact. Such awareness allows health workers to provide input towards early detection and response to zoonotic outbreaks and towards the support of environmental conservation practices that would limit the spillover of disease.

5. Integrating Environmental Health into Clinical Practice

Incorporating environmental health into clinical practice is essential for addressing the growing health challenges posed by environmental risks. Clinicians can adopt various strategies, from patient education and advocacy to the creation of clinical guidelines that include environmental health considerations, to mitigate these impacts.

5.1. Environmental Health Screening and Assessment

One of the greatest benefits of the integration of environmental health into day-to-day clinical practice is formal patient assessment for potential environmental exposure. This could include questioning them about their residential and occupational settings, use of household chemicals, and exposure level to air and water contaminants. Integration of complete environmental



health history should be the norm in patient evaluation, especially in patients with chronic illness that can be exacerbated by environmental determinants (Kilpatrick et al., 2017).

For instance, in asthma patients, health care providers should screen for possible environmental etiologies, such as indoor and outdoor air pollution, mold, and chemical exposure. Similarly, patients with unexplained or recurring illness should be screened for possible environmental etiologies, such as exposure to toxic chemicals or contact with contaminated water sources.

5.2. Patient Education and Risk Communication

Patient education about environmental health risks is a critical aspect of clinical practice. Healthcare professionals are in a unique position to inform patients about how environmental exposures affect health and provide practical advice on reducing these risks. For example, clinicians can recommend staying indoors on days with high pollution levels or using air purifiers to improve indoor air quality.

Communicating environmental risks is particularly important when these risks are not immediately obvious to patients. Many people are unaware of the long-term health effects of chemical exposures or the health risks associated with climate change. By effectively communicating these risks, healthcare providers can empower patients to take proactive steps to safeguard their health.

5.3. Collaboration with Public Health and Environmental Experts

Incorporating environmental health into clinical practice is also about teamwork among clinicians, public health professionals, and environmental scientists. This interprofessional collaboration enables clinicians to keep abreast of the newest environmental health hazards and collaborate with public health professionals on prevention.

For example, healthcare workers can participate in partnership with local environmental health officials to analyze air and water quality in their area, and push for policy reforms that will diminish environmental hazards. Clinicians can also collaborate with environmental organizations to educate the people about significant

environmental health problems, including climate change and pollution.

5.4. Development of Environmental Health Guidelines

To adequately address environmental health risks, there is a growing need for clinical guidelines that include environmental factors in patient care. Organizations such as the American Academy of Pediatrics (AAP) and the American College of Physicians (ACP) have begun to develop guidelines to help clinicians address environmental health risks in their practice (Trasande et al., 2016).

These guidelines should provide healthcare professionals with evidence-based recommendations for the screening, diagnosis, and management of environmental health conditions. They should also highlight the importance of preventive care, such as vaccinations and patient education, in reducing the long-term health impacts of environmental hazards.

5.5. Advocacy for Environmental Health Policies

Health care professionals possess a special and effective role to promote public health policies that protect the environment and enhance human health. Through their influence and expertise, clinicians can implement policy changes for the reduction of environmental health risks, including enhanced regulations on air pollution, control of chemicals, and encouragement of sustainable development.

For instance, health professionals can push for tighter regulations on industrial poisons and encourage the move toward the use of renewable sources of energy. Moreover, healthcare professionals can engage in initiatives promoting environmental justice, thereby safeguarding vulnerable groups against excessive exposure to environmental risks.

6. Barriers to Integrating Environmental Health into Clinical Practice

Despite the increasing recognition of the significance of environmental health in overall patient care, several challenges continue to hinder its full integration into clinical practice. These challenges include insufficient training and education on environmental health topics, time limitations during patient consultations, and limited access to relevant environmental health resources.



6.1. Lack of Training and Education

One of the biggest challenges to clinical integration of environmental health is poor training of the healthcare professionals on these issues while they are in school. A number of clinicians can be left without complete information on how to recognize specific environmental health hazards or how the hazards influence their patients' health. Consequently, they can be left unable to effectively handle such hazards in clinics (Kilpatrick et al., 2017). Addressing this challenge needs medical school curricula and continuing professional development courses to be aimed at the education of environmental health, thus equipping healthcare professionals with the necessary knowledge and competencies to address emerging environmental health problems.

6.2. Time Constraints

The practice time limits of the clinic offer another obstacle to evaluating and intervening in environmental health hazards. Environmental health histories take time, and most practitioners will find it difficult to fit these evaluations into their already packed schedules. One option would be to build environmental health screening instruments into electronic health record (EHR) systems. By automating identification of high-risk patients, EHRs may assist in providing timely and targeted interventions without necessarily adding much time per patient.

6.3. Limited Access to Environmental Health Resources

Another challenge is the limited access to environmental health resources, such as up-to-date information on local air and water quality or practical guidelines for managing environmental exposures. Many healthcare providers may not have the necessary tools to address these risks effectively. To overcome this barrier, healthcare organizations must ensure that clinicians have easy access to relevant environmental health resources. This could include online databases, educational materials, and collaborations with public health agencies, enabling healthcare professionals to stay informed and provide evidence-based care.

Conclusion

The integration of environmental health into practice is required in addressing the growing health risks of

environmental degradation. With continued challenges from climate change, pollution, chemical exposure, and loss of biodiversity to public health, healthcare practitioners must adjust practice to address these developing challenges. Through environmental health assessments, patient education, interdisciplinary practice, and clinical advocacy, healthcare practitioners can assist in reducing the health impacts of environmental hazards and improving population health.

In order to achieve this objective, health care professionals must overcome barriers such as inadequate training, time constraints, and resource deficits. Medical schools' curricula, professional organizations, and health care organizations have an obligation to help practitioners integrate environmental health factors into clinical practice. By engaging in such activities, the health care system can begin to play a more assertive role in controlling the root determinants of illness and creating improved long-term health outcomes in a more uncertain future.

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