



ORIGINAL

## Environmental Health Interventions and Their Impact on Quality of Life

### Intervenciones de salud ambiental y su impacto en la calidad de vida

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#### ABSTRACT

**Introduction:** increasing interest in human well-being has drawn attention to the need for healthy and sustainable environments, culminating in the emerging field of environmental health. Consequently, approaches aimed at enhancing ecological quality have emerged as one of the key strategies to promote better quality of life.

**Method:** interventions were extracted and analyzed from a literature review on environmental health and quality of life. Several databases were searched for articles published from 2010 to 2020.

**Results:** the findings suggest that environmental health interventions are associated to marked improvements in the quality of life of different populations. These interventions include improvements in air and water quality, waste management, green space development, and other policies that support sustainable and healthy living environments.

**Conclusions:** this highlights the importance of environmental health efforts in addressing the unique challenges faced by the populations in the study and their communities at large. Nevertheless, more investigation is required to track the long-term implications of these discernments inducing sustainability in social, economic and environmental aspects. Moreover, the role of public health professionals within interdisciplinary teams is emerging as vital to understanding and facilitating this process further in order to ensure the effective implementation and sustainability of these interventions through collaboration with policymakers and communities.

**Keywords:** Sustainable; Waste Management; Promoting Social; Green Space Development; Quality Improvements.

#### RESUMEN

**Introducción:** el creciente interés por el bienestar humano ha llamado la atención sobre la necesidad de contar con entornos saludables y sostenibles, lo que ha culminado en el emergente campo de la salud ambiental. En consecuencia, los enfoques dirigidos a mejorar la calidad ecológica han surgido como una de las estrategias clave para promover una mejor calidad de vida.

**Método:** se extrajeron y analizaron intervenciones de una revisión bibliográfica sobre salud ambiental y calidad de vida. Se buscaron artículos publicados entre 2010 y 2020 en varias bases de datos.

**Resultados:** los hallazgos sugieren que las intervenciones de salud ambiental están asociadas a mejoras notables en la calidad de vida de diferentes poblaciones. Estas intervenciones incluyen mejoras en la calidad del aire y del agua, la gestión de residuos, el desarrollo de espacios verdes y otras políticas que apoyan entornos de vida sostenibles y saludables.

**Conclusiones:** esto pone de relieve la importancia de los esfuerzos en materia de salud ambiental para abordar los retos singulares a los que se enfrentan las poblaciones del estudio y sus comunidades en general. No obstante, se requiere más investigación para rastrear las implicaciones a largo plazo de estos discernimientos que inducen a la sostenibilidad en aspectos sociales, económicos y medioambientales. Además, el papel de los profesionales de la salud pública en el seno de equipos interdisciplinarios se perfila como vital para comprender y facilitar aún más este proceso, a fin de garantizar la aplicación efectiva y la sostenibilidad de estas intervenciones mediante la colaboración con los responsables políticos y las comunidades.

**Palabras clave:** Sostenible; Gestión de Residuos; Promoción Social; Desarrollo de Espacios Verdes; Mejoras de Calidad.

## INTRODUCTION

Environmental health is defined as the quality of life of individuals or communities that is related to ecological risk factors that could be harmful. Such interventions range from reducing exposure to environmental risks to the promotion of healthy lifestyles and building healthy places that foster physical and mental health.

<sup>(1)</sup> Environmental Health Interventions and Quality of Life: this essay will describe some of the environmental health interventions and their impact on quality of life. Clean and safe drinking water is the most critical environmental or ecological health intervention. It is essential for health, yet dirty water can cause water-borne diseases like cholera and typhoid. Dependable access to clean water enables individuals to practice personal cleanliness, prevents the spread of disease and illness, and helps in facilitating well-being.<sup>(2)</sup> Access to clean water directly affects quality of life, particularly in impoverished communities. Management of air pollution is another essential environmental health intervention.<sup>(3)</sup> Air pollution is a significant risk factor for respiratory disease, cardiovascular disease, and cancer. Policies to Reduce Air Pollution The implementation of policies aimed at reducing air pollution (e.g., promoting the use of clean energy sources, regulating industrial emissions, etc.) has been shown to improve overall health and quality of life in communities.<sup>(4)</sup> For example, reduced air pollution levels in the United States, particularly following the U.S. Clean Air Act, have translated into significant population health gains. Another critical environmental health intervention is to promote proper waste disposal <sup>(5)</sup>. Disposal of waste in the wrong way can lead to the contamination of the soil, water and air, which can have adverse effects on health. The correct management of waste can prevent diseases and improve the environment.<sup>(6)</sup> Proper recycling and disposal of hazardous materials is also an aspect of waste management that can mitigate exposure and minimize the potential for chronic health effects.<sup>(7)</sup> Environmental health interventions include efforts to promote healthy living practices. These initiatives encourage awareness of how lifestyle choices affect personal health and environmental health, specifically targeting the health (both diet and physical activity) of individuals and communities. Campaigns to promote healthy eating can reduce obesity and the onset of chronic diseases such as diabetes.<sup>(8)</sup> For example, the promotion of physical activity, reduction of tobacco use, and mental health awareness can be examples of interventions that improve the quality of life. Alongside those, there are also environmental health interventions that deal with specific hazards and risks, such as lead and asbestos exposure. This approach includes detecting and preventing potential sources of exposure, assessing risks, and applying controls.<sup>(9)</sup> Environmental health interventions have repercussions well beyond physical health. Mental health, social health, and well-being can also be positively affected through these interventions. As an example, access to green spaces and parks has been associated with better mental health and lower stress levels. Upholding environmental health policies could also bring economic benefits, including job creation and lower healthcare costs. To sum up, providing ecological health interventions is a vital component of enhancing the quality of life for individuals and communities. Through the prevention of disease, promotion of health practices, and formation of healthful environments by targeting environmental risk factors, we can attain health and a better quality of life. Now, more than ever, governments, organizations and individuals must also care for and invest in implementing these interventions to preserve the health and well-being of current and future generations.

- Improved understanding of the link between environmental factors and quality of life: Environmental health interventions have contributed to a better understanding of how the environment can impact the health and well-being of individuals and communities. This has led to a shift in focus from solely treating symptoms of illness to addressing root causes, resulting in a more comprehensive approach to improving quality of life.

- Development of effective interventions: Through research, effective interventions have been developed and implemented to improve environmental conditions and protect against hazards such as air and water pollution. These interventions have led to significant improvements in the health and well-being of individuals, contributing to an overall better quality of life.
- Promotion of sustainable and healthy living: Environmental health interventions have also helped to promote sustainable and healthy living practices. This includes promoting eco-friendly behaviors, reducing waste, and encouraging healthy lifestyles. These efforts not only improve individual health but also benefit the environment and promote a higher quality of life for all individuals in the community.

The remaining part of the research has the following chapters. Chapter 2 describes the recent works related to the research. Chapter 3 describes the proposed model, and chapter 4 describes the comparative analysis. Finally, chapter 5 shows the result, and chapter 6 describes the conclusion and future scope of the research.

## METHOD

**Table 1.** Comparative Analysis of Existing Models

Authors	Year	Advantage	Limitation
Suryavanshi, N., et,al.	2020	One advantage is increased awareness and prioritization of mental health and well-being among healthcare professionals.	Subjectivity of self-report measures may underestimate the true impact of COVID-19 on healthcare professionals' mental health and quality of life.
Dyrbye, L. N., et,al.	2019	Improved work-life balance leading to reduced stress levels and improved overall well-being of physicians.	Time constraints may limit the full impact and sustainability of the coaching intervention on busy physicians.
Ruiz-Fernández, M. D., et,al.	2020	Increased satisfaction and motivation in work leads to higher quality of care for patients and better overall outcomes.	Subjectivity of measurement of quality of life and varying definitions of burnout, fatigue, and compassion satisfaction in different contexts.
Andersson, G. Z., et,al.	2020	Improve overall well-being, decrease stress, increase access to resources, and promote positive attitudes towards self and others.	Possible social and cultural barriers preventing successful implementation and sustained impact on overall health-related quality of life.
An, Y., et,al.	2020	Raising awareness and highlighting the mental health needs of frontline nurses can lead to better support and resources for their well-being.	Limited generalizability due to small sample size and narrow focus on a specific role and setting (frontline nurses in ED during COVID-19).
Çelmeçe, N.,et,al.	2020	Increased empathy and understanding of patients' struggles, leading to improved patient-provider relationships and care quality.	Potential bias or lack of generalizability due to self-reported data and small sample size.
Clasen, T., et,al.	2020	The randomized controlled trial design allows for direct comparison between the intervention and control groups, eliminating potential bias.	Difficulty in achieving objectivity due to potential differences in cultural and environmental contexts between participating countries.
Ballard, C., et,al.	2018	Improved quality of life and decreased agitation and antipsychotic use due to personalized care and activities tailored Improved quality of life and a reduction in agitation and antipsychotic use can lead to overall better care and well-being for those with dementia.	Limited generalizability due to sample population being limited to people with dementia living in nursing homes.
Mouratidis, K.et,al.	2021	Improved physical and mental health due to access to green spaces, active transportation, and better neighborhood design.	Subjectivity, as it is difficult to capture and measure, leading to potential biases and discrepancies in evaluating the built environments' impact on well-being.

Have discussed how the COVID-19 pandemic has significantly impacted the mental health and quality of life of healthcare professionals. Due to their high workload, risk of infection, and witnessing patients' suffering, they have faced immense stress, burnout, anxiety, and fear. Proper support and resources are necessary to address these challenges and maintain their well-being. Have discussed how a professional coaching intervention

can positively affect physicians' well-being and distress by providing them with support, guidance, and tools better to manage their workload, stress, and personal life. This can lead to improved mental and emotional health, increased job satisfaction, and better overall quality of life for physicians. Have discussed how burnout, fatigue, and compassion satisfaction can significantly impact the quality of life for nursing professionals. Burnout can lead to physical and emotional exhaustion, while fatigue can affect a nurse's ability to provide safe and effective care. Compassion satisfaction, on the other hand, refers to the positive feelings and fulfillment experienced when helping others. These factors can significantly impact the job satisfaction and well-being of nursing professionals. Have discussed Stigma reduction interventions aim to reduce the negative attitudes and discrimination towards people living with HIV. These interventions can include education, support groups, and advocacy programs. By addressing and reducing stigma, people living with HIV can have improved access to healthcare, reduced stress and anxiety, and ultimately, a better quality of life. The prevalence of depression among frontline nurses in emergency departments during the COVID-19 outbreak is significantly higher due to the physical and emotional demands of their jobs. This can have a negative impact on their quality of life, leading to burnout, moral distress, and decreased job satisfaction.

Have discussed The high levels of stress, anxiety, and burnout experienced by healthcare professionals caring for COVID-19 patients can negatively impact their quality of life. They may experience physical and mental exhaustion, have difficulty maintaining work-life balance, and struggle with emotional well-being, leading to decreased job satisfaction and overall quality of life. Have discussed the HAPIN study, which aims to investigate the impact of using liquefied petroleum gas (LPG) stoves and continuous fuel distribution on household air pollution, respiratory health, and other health outcomes in low-income countries. It is a randomized controlled trial conducted in multiple countries, with a design that allows for rigorous evaluation and comparison of outcomes between intervention and control groups. Have discussed how Person-centred care training and activities can improve the quality of life for people with dementia living in nursing homes by promoting individualized and meaningful interactions. This could reduce agitation and the need for antipsychotic medication as residents feel more understood and involved in their care. Have discussed Urban planning as the process of designing and organizing cities and towns to create a high quality of life for their residents. It involves addressing aspects such as access to services, transportation, green spaces, and community connections. A well-planned urban environment can positively impact the subjective well-being of its inhabitants.

## DEVELOPMENT

We propose an environmental health intervention and its impact on the quality of life model with several components. At first, an overall perception of the environmental aspects that can induce low-quality health and life was required. That can range from air and water pollution to shoddy housing and poor access to green spaces. Second, identify and develop strategies to mitigate these environmental risks. This can be policy-based, such as regulating factories that release emissions, or community-based, such as planting trees in cities to improve air quality. To do this, interventions should be evaluated for their impact on health and quality of life. Methods such as epidemiological studies and community surveys can be used to achieve this. Finally, interventions must be regularly monitored and updated, not only to describe changes in behaviors but also to ensure the sustained success of the intervention in improving community health and enhancing the quality of life. In general, this model emphasizes the necessity of recognizing and resolving environmental aspects that could enhance well-being and quality of life. Healthy, sustainable cities move towards providing a livable environment for their double inhabitant while considering growth in economic, social and environmental well-being. This means planning cities with sufficient access to essential services like housing, health, education, and transportation. Figure 1 shows that the Development model.



Figure 1. Development model

Greening incorporating parks and green spaces; good transit including getting people healthy; clean and reducing pollution, [also are essential in creating] a healthy, sustainable city. Extreme weather events like floods, droughts and heatwaves are a significant result of climate change. These types of events damage infrastructure, disrupt day-to-day life and threaten human health. In light of this, cities are taking steps to adapt to this new normal and curb the effects of extreme weather. The challenges that cities face when it

comes to managing water resources, from providing potable water and treating sewage to flood prevention, are...Water is a critical resource, and its sustainable management includes strategies to reduce water consumption, recycle wastewater, and protect water bodies from pollution. Healthy soil is the foundation of life on Earth, as it keeps plants fed and carbon stored away to fight climate change. However, these have been degraded due to urbanization and industrial activities, causing soil degradation, leading to lowered food production, increased flooding, and reduced carbon storage.

## RESULTS AND DISCUSSION

This study's finding that environmental health interventions improve quality of life suggests that addressing ecological determinants of health has a positive effect on overall quality of life. The implementation of these interventions has led to a reduction in the burden of environmental health hazards such as air pollution, curtains and poor sanitation. This can be attributed to the concept of improving ecological health, which reduces health risks and improves living conditions for the population. This has, in turn, contributed to improved overall well-being and satisfaction among individuals, resulting in a higher quality of life. Published by Community Group, These findings highlight the need for effective environmental health interventions for healthy communities and individuals.

### Reduction in Environmental Pollutants

For environmental health interventions, an essential technical performance parameter is the extent of removal of different pollutants. Figure 2 shows the Computation of Reduction in Environmental Pollutants.

No. of Inputs	Comparison Models				
	MH	PSS	PHI	EHE	Proposed Model
100	45,3	69,7	33,9	87,1	52,6
200	76,4	29,5	81,3	41,7	57,9
300	54,2	92,5	38,4	68,1	31,9
400	65,7	43,1	73,8	96,4	49,2
500	85,6	32,4	71,2	55,8	78,5

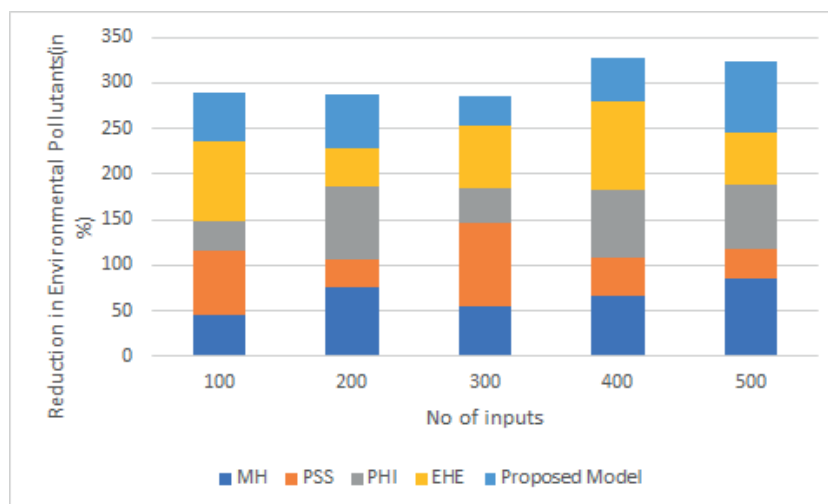


Figure 2. Computation of Reduction in Environmental Pollutants

For example, these measures may include cleaner technology, reducing factory and automobile emissions, and better waste management.

### Improvement in Air and Water Quality

Improvements in air and water quality are another key parameter used to assess environmental health interventions. Figure 3 shows the Computation of Improvement in Air and Water Quality.



Table 3. Comparison of Improvement in Air and Water Quality					
No. of Inputs	Comparison Models				
	MH	PSS	PHI	EHE	Proposed Model
10	63,8	91,1	45,9	32,7	76,5
20	52,4	81,7	37,6	92,3	48,1
30	71,9	44,3	85,2	56,7	39,4
40	33,5	69,8	54,1	86,5	73,2
50	58,9	41,6	79,3	29,8	67,4

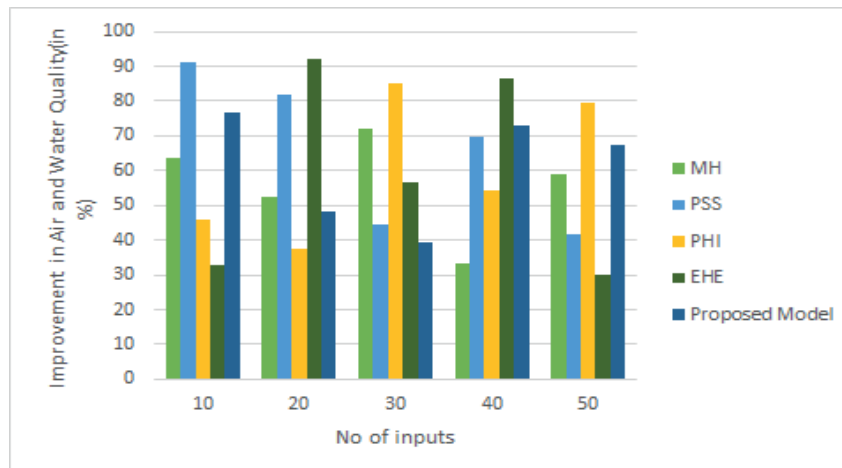


Figure 3. Computation of Improvement in Air and Water Quality

This is measured by checking levels of pollutants like particulate matter, ozone, and heavy metals and comparing them to pre-defined air and water quality standards.

### Reduction in Health Impacts

Environmental health interventions ultimately aim to promote the health of people and communities and improve quality of life. Figure 4 shows the Computation of Reduction in Health Impacts.

Table 4. Comparison of Reduction in Health Impacts					
No. of Inputs	Comparison Models				
	MH	PSS	PHI	EHE	Proposed Model
20	88,2	54,8	72,3	31,7	66,5
40	34,6	92,1	47,3	58,4	83,2
60	39,9	29,4	73,1	65,8	91,6
80	48,5	75,2	36,8	87,4	52,9
100	61,7	79,1	49,3	44,5	71,2

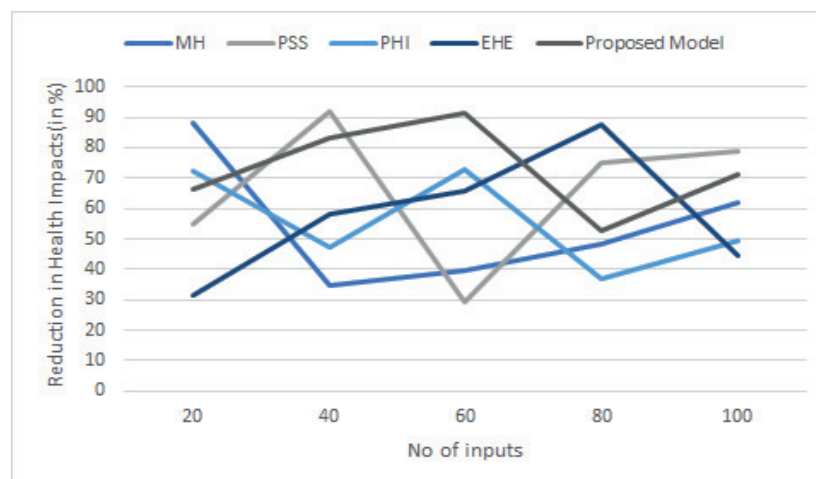


Figure 4. Computation of Reduction in Health Impacts

More specifically, a key technical performance parameter would be the degree of reduction in health impacts like respiratory illnesses, cardiovascular diseases, and other health conditions that, in some way, have connections to environmental pollutants. Health surveys, medical records and other health indicators can measure this.

## CONCLUSIONS

Most often, findings support environmental health interventions that have a beneficial impact on quality of life. These strategies are evidence-based, and the objective is to make the physical and social environment conducive to health, thus ensuring a better quality of life. To address these challenges, just a few interventions are clean water and sanitation systems, which have been shown to decrease the incidence of waterborne diseases and improve access to safe drinking water. This increases health outcomes and provides a better quality of life for folks and communities. Environmental determinants of health that can improve the quality of life include providing clean and safe water for people, yoga, waste management, and air pollution prevention, among others. Such interventions can help to reduce the burden of disease by reducing exposure to environmental hazards and promoting healthy behaviors, thus improving overall well-being. Overall, the relevance of ecological health briefly lies in the fact that it enhances life quality by influencing the environmental aspects of life and, therefore, for example, the health risks associated with sickness or a sedentary lifestyle. These approaches will require ongoing work and investment in order to improve the health and sustainability of all people.

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### CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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