

ADVANCING ENVIRONMENTAL HEALTH LITERACY AND JUSTICE IN LOW-INCOME ELEMENTARY SCHOOLS THROUGH EXPOSURE RESULTS COMMUNICATION

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Abstract

Many low-income communities still face environmental health disparities, with children potentially being exposed to environmental hazards that can have a negative impact on their health, learning and wellbeing. Schools situated in underserved communities often have environmental health resource access, access to environmental health data and information, aging infrastructure, and poor indoor air quality issues. This research examines how exposure results communication can help to increase student, family, and school community environmental health literacy and environmental justice. The study explores the communication strategies that can enhance environmental exposure awareness, facilitate informed decision-making and promote community engagement in mitigating environmental risks in a clear, accessible, and culturally appropriate manner. The research is aimed at assessing the effectiveness of exposure data in creating meaningful exposure knowledge for low-income elementary school populations. It emphasizes the need for partnership between educators, the public health community, and the community to address disparities in environmental health. The findings from this study will give insights to the development of effective communication approaches that will enable vulnerable communities and enhance environmental health education in school settings.

INTRODUCTION

Children's health, growth and school performance are greatly impacted by the environment in which they live. Schools are an environment where children spend significant time, and therefore are an important place to detect and respond to environmental health threats. Low income elementary schools, however, are more likely to be in communities that are exposed to environmental hazards as a result of socioeconomic disparities, aging

infrastructure, limited resources, and less access to environmental health information. These inequities have been linked to continued environmental health inequalities and the need for effective interventions that foster environmental justice and health equity (Braveman et al., 2017).

The concept of environmental health literacy (EHL) has become a significant method to help people and communities better understand environmental risks, interpret health information

and engage in decisions that influence their health. Environmental health literacy for children and school communities is the knowledge and skills they need to identify potential hazards, understand how they might be exposed, and learn to respond in a protective manner (Finn & O'Fallon, 2017). EH literacy education for students in disadvantaged communities can help ensure that they are aware of environmental hazards and become an active part in the development of a healthier learning environment.

Poor environmental conditions, such as air pollution, chemical contaminants, unsafe water and poor indoor environmental conditions, are disproportionately experienced by low-income communities. These exposures can lead to children experiencing respiratory issues, developmental issues, poor school performance, and a negative impact on their health through adulthood (Landrigan et al., 2018). Environmental justice research highlights that marginalized groups are likely to be exposed to higher levels of environmental hazards, and are likely to have limited capacity to manage and minimize environmental risks. It is important to identify environmental risks and communicate clear and helpful information on the impacts of exposure to affected communities, to address these inequalities. (Mohai et al., 2019)

Communication about exposure is essential to environmental health interventions, as information about environmental exposures may be complex and hard for audiences other than scientific experts to understand. The effective communication strategies can help to transfer the technical exposure data into knowledge that can be used for student, parent, educator and community informed decision making. Effective communication strategies that take into account language, culture and community needs can help to build confidence, raise awareness and motivate community to take collective action to address environmental health risks (Baur et al., 2019).

The school is a special setting in which environmental health education can be combined with community involvement. Schools can help build students' knowledge of

environmental exposures and encourage positive behaviors by sharing exposure results in an educational program, visual materials, classroom activities, and community discussions. The research also underscores the importance of integrating environmental literacy with data interpretation skills to empower students to grasp their local environmental issues and contribute to their resolutions (Baek et al., 2023).

Although there is increasing focus on environmental health literacy and environmental justice, there are still not many effective systems in place in many low-income schools for conveying information about environmental exposure to students and families. Much research has been conducted on quantifying environmental hazards, but fewer studies have explored how the risk of the environment can be communicated so as to increase understanding and enhance community empowerment. Improving exposure results in improved communication and is therefore an important step towards minimizing environmental inequities and improving equitable health outcomes.

This research concentrates on examining the effectiveness of communicating environmental exposure results and their impacts on improving environmental health literacy and promoting environmental justice in low-income elementary schools. This study will look at the strategies used with communication, community involvement, and educational outcomes to contribute to strategies that enable vulnerable school communities and promote healthier environments for children.

Background and Context of the Study

The issue of environmental health is an important public health problem, especially for children in low-income communities. Schools can be a site for children's learning, but also a point of potential exposure to several environmental hazards. Poor indoor air quality, old school construction, chemical contamination, low ventilation, and pollution sources can all have a detrimental impact on children's health and ability to learn. Children's health is more

susceptible to environment exposures as their bodies are still developing, and exposure for long periods of time during the early years can cause breathing difficulties, developmental issues, and health impacts later in life (Landrigan et al., 2018).

Low-income elementary schools are typically located in communities where there is an increased risk of environmental hazards because of social and economic inequities. These communities may be unable to detect and mitigate environmental hazards due to limited finances, infrastructure, and access to environmental health information. These conditions are part of a much larger environmental justice issue in which marginalized populations often are exposed to higher risk and do not have access to the same opportunities for engagement in environmental decision-making processes as other groups (Braveman et al., 2017). Communication of exposure has become a focus because it is a needed way to help the community understand the science. While environmental monitoring and exposure assessments can provide valuable data, these results can have no real impact on meaningful change unless they are communicated in a way that is understandable and useful to the community in question. Reporting exposure results to students, families, teachers and/or public health can raise awareness, environmental health literacy and foster collective action among students, families, teachers and/or public health workers (Baur et al., 2019).

Environmental Health Literacy and Justice

Environmental Health Literacy is the capacity of individuals and communities to access, comprehend, assess and apply environmental health information to make decisions. From the perspective of the school context, environmental health literacy enables students to identify risks in the environment, comprehend how exposures impact health, and adopt behaviors to foster a healthier environment. Enhancing environmental health literacy is a critical issue for low-income communities because it empowers

people to address environmental issues related to their everyday lives (Finn & O'Fallon, 2017).

Environmental justice is about fairness in how all communities are protected from environmental hazards, and fair opportunity for all communities to be involved in decisions affecting their environmental health. Certain schools within low-income communities may be more likely to be exposed to pollutants, and not have adequate resources to prevent and mitigate pollution. To overcome these disparities, interventions must include a mix of environmental education, open and honest communication, and community engagement (Mohai et al., 2019).

Embedding exposure results communication in school-based programs will enable educators and health professionals to play a role in supporting the translation of complex environmental data to knowledge. This can engage students and families in the process of learning about the conditions in their community and take part in improving school health and safety.

Research Problem and Significance

While exposure assessment has advanced in the school environment to better delineate health risks, many schools and communities struggle to understand and act on exposure information. Results from scientific research are frequently reported in technical documents that can be challenging for students, parents and community members to understand. Consequently, vital environmental health data could not reach the populations at the greatest risk from environmental risks.

Without the effective communication of the results of environmental research, there exists an exposure results to community action gap. If communication is not clear and accessible for school communities of poverty, they may be less likely to identify hazards, voice concerns for improvement, or be engaged in environmental health decision-making. This research is important since it examines how to enhance communication practices that will bolster environmental health literacy and environmental justice.

Knowing how to communicate exposure information to vulnerable communities can facilitate the development of more effective strategies by schools, policy makers, and public health organizations to alleviate environmental health disparities and improve the health of schools.

Aim and Objectives of the Study

This research aims to explore the potential of how exposure results communication can enhance environmental health literacy and engage environmental justice in low-income elementary schools. The study aims to gain insights into the ways in which communication strategies can be made accessible to the school community, families, and students to increase their awareness and ability to respond to environmental health risks.

This study aims to

- 1.To evaluate the effectiveness of exposure results communication in raising awareness about environmental health issues in low income school communities.
- 2.To examine the connection between EHL and EJ in elementary schools.
- 3.To determine effective communication methods to present information about environmental exposures to students, families and educators.
- 4.To explore the role that better information on environmental health can play in community engagement and decision making.

Research Questions

This research is designed to answer the following research questions

- 1.What is the impact of Communication of Exposure Results on Environmental Health Literacy of Students and Communities in Low-Income Elementary Schools?
- 2.What are some of the critical challenges in the environment for low-income school populations?
- 3.What are the ways communication strategies can increase awareness of the risk of

environmental exposures for students, parents and educators?

- 4.How can environmental health literacy help to advance environmental justice in school communities?
- 5.How do schools and public health agencies give communities a platform to improve environmental health communication and participation?

LITERATURE REVIEW

Vulnerable populations, especially children in low-income communities, are concerned with the risks to their environmental health. Children have been identified as being more vulnerable to environmental hazards because of their immature biological systems, increased exposure and increased lifetime risk periods. Schools in disadvantaged areas may face additional environmental issues such as poor indoor air quality, chemical contamination in the school, outdated school facilities and exposure to pollutants from the surrounding environment. These conditions may affect children's physical health, cognitive and learning outcomes (Landrigan et al., 2018).

The term environmental health literacy has grown in significance as a new concept to enhance public awareness of environmental risks and encourage positive actions for health. It goes beyond simply knowing about environmental health, to being able to access, interpret, evaluate and apply environmental health information to make decisions. Finn and O'Fallon (2017) highlighted the importance of environmental health literacy as a tool to enable individuals and communities to identify hazards and take action to ensure health protection. Within elementary schools, environmental health literacy provides opportunities to introduce children to concepts related to pollution, exposure prevention, and sustainable practices at an early stage of development.

Environmental justice is also closely related to environmental health literacy since communities need information as well as opportunities to tackle environmental inequalities. Social, economic and structural factors have been shown

to increase the likelihood that low-income and minority communities will be impacted by environmental hazards. These communities might be more likely to be exposed to pollution and have less capacity to lower the risk or shape environmental policies (Mohai et al., 2019). Environmental justice approaches focus on engaging with affected people to address issues, to comprehend risks, and to design solutions.

Communication, in the form of exposure, is a key link to bridge science and action for the community. Evaluating the environment may provide complex information about pollution, exposure, and risk to health – but such information may not be relevant to the community unless it is communicated in a clear and accessible way. These communication strategies may involve the use of visuals, simplified explanations, educational programs, and community discussions to communicate scientific information to enable practical knowledge to be gained. Baur et al. (2019) found that health communication helps to build the knowledge base of the public and enables them to make informed decisions, especially when they are exposed to environmental health issues.

Environmental health education and community involvement occur in an important place – the school. Schools provide opportunities for awareness and preventive action, as students, teachers and families come in contact regularly in the school context. Environmental education programs which involve both the environment and an active component can enhance students' understanding of environmental issues and their problem-solving skills. Educating students about the environment within the context of hands-on learning experiences has been suggested to promote deeper students' engagement in environmental concerns and enhance their ability to interpret environmental information (Baek et al., 2023).

There are also problems in disseminating information about exposure to the environment to vulnerable groups. Traditional communication

tools could be less effective due to various differences: educational level, language barriers, limited access to resources, and lack of trust in institutions. As a result, communication should be tailored to meet the needs of the community, and should be transparent, culturally relevant, and participatory.

Community-based communication structures have been identified as successful mechanisms to enhance the relationship between community and schools and researchers (Vaughan et al., 2020).

While there has been great progress in quantifying environmental hazards and the health impacts of exposures, there are still some areas where work needs to be done to enable the community to benefit from these exposure measurements. A number of studies have been conducted on the identification of environmental risks, but little attention has been paid to the reception, understanding and use of exposure information by affected communities. This gap needs to be addressed if we are to improve environmental health literacy and move towards environmental justice in low-income elementary schools.

Environmental Health Risks Among School-Aged Children

Environmental hazards can impact the health of children, especially, as their bodies and immune systems are still developing, and they are considered one of the most vulnerable groups. A child's exposure to harmful factors in the environment can affect their growth, learning and health in the present and future. Schools are the environment where children spend a large part of their daily life and therefore are important settings in which to study these risks. Indoor air pollution, poor ventilation, mold, lead exposure, chemical pollutants, pesticides and outdoor air pollution caused by traffic and industrial activity are some of the environmental hazards that are common in and around schools (Landrigan et al., 2018).

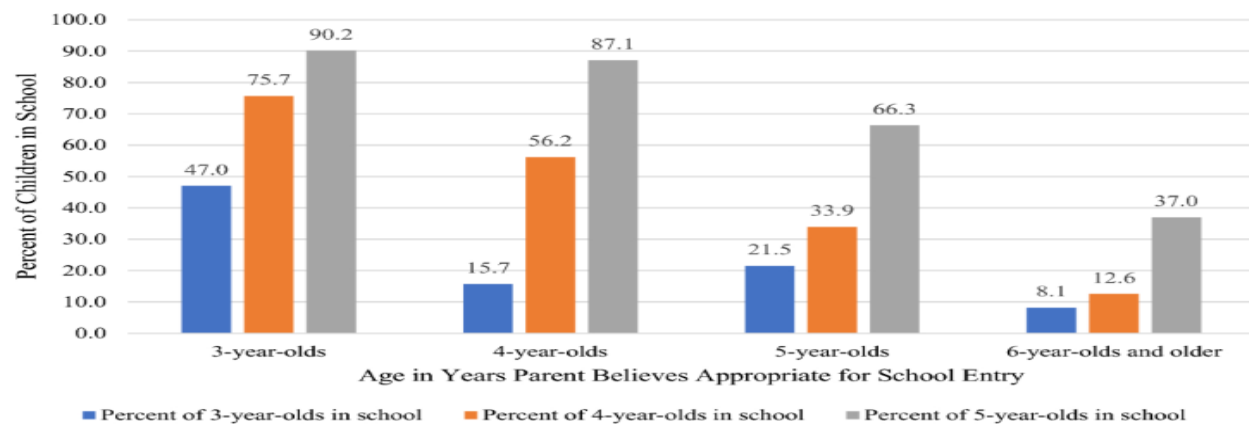


Fig 2.1 Environmental Health Risks Among School-Aged Children

The environmental issues faced by low-income schools may be more severe because they lack resources for environmental improvement, have more limited funding, and have older facilities. Children can be exposed to pollutants and unhealthy learning environments as a result of poor building conditions. Exposures to the environment have been associated with higher rates of asthma, respiratory diseases, and lower academic performance as well as problems with concentration in children (Trasande et al., 2017). Research in environmental health focuses on the study of sources of exposure, and on the creation of prevention measures to safeguard children's health. But the process of mitigating environmental risk is not just scientific, it also

needs communication tools that enable school communities to gain an understanding of and act on identified risks.

Environmental Justice and Health Inequalities

Environmental justice is about equitable distribution of environmental benefits and protection from environmental risks among all populations. Low income communities and socially disadvantaged groups have been consistently found to be at higher risk of exposure to environmental hazards than more advantaged groups. These differences shaped by residential location, economic constraints, past discrimination experiences and inequitable access to resources (Mohai et al., 2019).

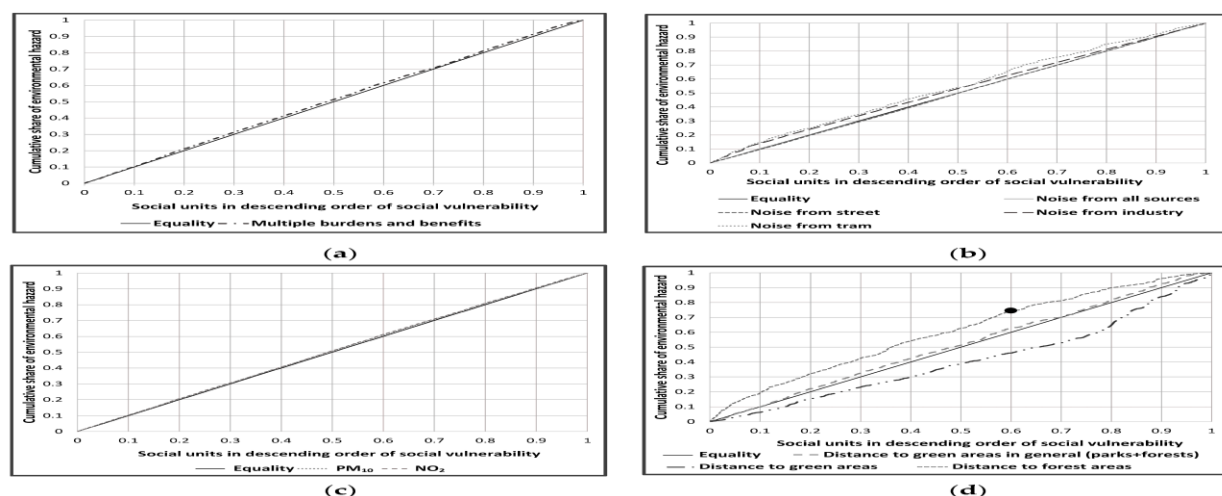


Fig 2.2 Environmental Justice and Health Inequalities

Education's aspect of environmental justice has been seen in the disparities of schools that serve communities of color or communities with lower income levels. Schools in disadvantaged regions may be disadvantaged in ways other than those previously mentioned, e.g. lack of access to health-focused improvements, poor maintenance and environmental monitoring. Consequently, students in these schools could be exposed to higher environmental health risks.

Strategies to tackle environmental injustice must engage the community that is being impacted in the process of understanding risk and creating solutions. Access to Environmental information can facilitate community involvement, enhance decision making and foster equity. It is, therefore, important to consider environmental health literacy as an important part of the environmental justice, as communities that are knowledgeable about environmental issues can better advocate for healthier environments (Finn & O'Fallon, 2017).

The Role of Exposure Results Communication

Exposure results communication serves as a linkage between scientific research about the environment and community action. Environmental monitoring programs can generate complex scientific data about pollutants, exposure and potential health effects. But if communication is not effective, these outcomes can be hard for students, parents and community members to grasp and put into practice.

Communication strategies can make information easy to understand and help users shift to more preventive behaviors. Simple language, visual explanations, educational materials and community based discussion are effective ways to explain the environmental risks. Baur et al. (2019) emphasized the importance of audience knowledge, culture and specific concerns in successful health communication.

Transparency and trust between researchers, schools and families can be achieved with the communication of exposure results in low-income school communities. Once communities are aware of the environmental conditions impacting their schools, they are able to be more involved in thinking through solutions. The communication about exposure can thus enhance awareness and awareness of the need for collective action to improve the environment.

Improving Environmental Health Literacy Through Education

Child and community environmental health literacy is a critical function of education. Environmental health education enables students to grasp the connections between environment and human health, and promotes adaptive behavior to minimize exposure risk. Schools are a very suitable place to start inculcating environmental concepts as children are at a crucial stage of learning and development.

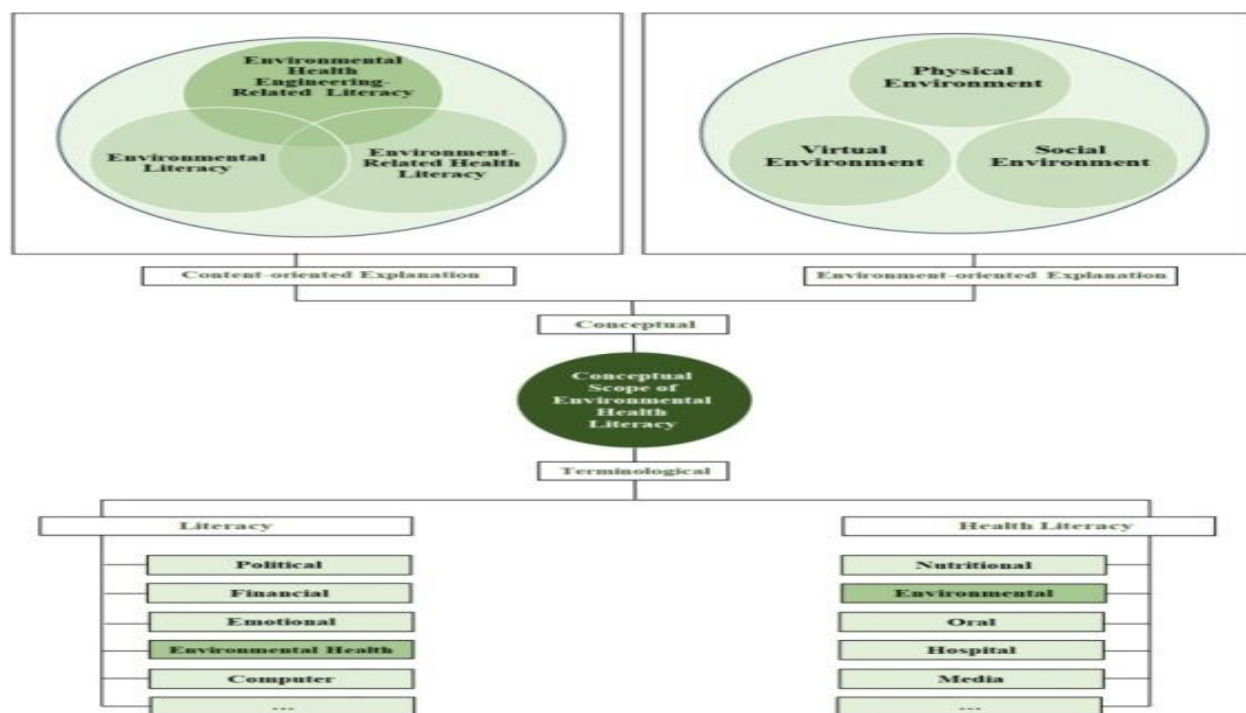


Fig 2.3 Improving Environmental Health Literacy Through Education

Educational methods that involve interaction and community focus are more effective than information delivery methods, according to previous research. Students can acquire critical thinking skills and gain a deeper understanding of environmental issues through various activities such as environmental monitoring projects, classroom discussions, problem-solving exercises, and more (Baek et al., 2023).

Increasing the environmental health literacy of students can also have a positive impact on the family and community because children are likely to share what they learn with others. Exposure results communication, combined with education, can turn environmental data into useful knowledge which can help inform healthier choices. This helps build community engagement, fostering sustainability and long-term environmental consciousness.

Research Gaps and Emerging Needs

Previous studies have helped to deepen the understanding of environmental hazards that pose threats to children, but there are significant gaps in the way environmental exposure data can

be used for effective community action. Most of the current literature is concerned mainly with the quantifying of the environmental risks without accounting for the role of the dissemination of the exposure effects to the population concerned.

Very little research has examined how exposure communication, environmental health literacy, and environmental justice are related in low-income elementary schools. There is a need to pay more attention to what strategies in communication best facilitate the interpretation of environmental health information by students, families, and educators.

More research is needed regarding community-focused communication models that utilize scientific evidence and educative methods that are accessible. Further research is also needed to explore the long-term effects of EHL programs on student awareness, community engagement and environmental decision-making. The closing of such gaps can help to ensure more equitable solutions to safeguard the health of children and promote environmental justice in underserved school neighborhoods.

RESEARCH METHODOLOGY

A quantitative study approach will be employed in this study to investigate the effect of exposure results communication on environmental health literacy and environmental justice awareness for low income elementary school community. A quantitative design enables the researcher to gather quantitative data, detect patterns, and assess the changes in participants' knowledge, awareness and understanding of environmental health risks.

Structured surveys and questionnaires are the main data collection tools employed in the study. The instruments measure the environmental health knowledge, understanding of exposure information, awareness of environmental risks, and perceptions of environmental justice issues of the participants. Close-ended questions and likert scale items are used to gather responses that can be used numerically for statistical analysis.

Students, teachers and parents of selected low-income elementary schools are part of the study population. Participants are sampled with an appropriate sampling technique to ensure that the data reflects experiences and perspectives of the school communities to be targeted. The number of children involved depends on the goals of the study and the availability of children. The data collection that takes place is centered on the pre and post assessment of participants' understanding after exposure to the results communication of data. The communication materials simplify information about environmental exposure to assess if

environmental exposure information can be made clear and accessible to help increase environmental health literacy.

The data collected are analyzed using descriptive statistical approaches such as frequencies, percentages, mean scores and standard deviations. These analyses allow for the identification of the knowledge levels of participants, their awareness of environmental risks, and their knowledge change after environmental awareness communication interventions. The effectiveness of the results communication of exposure on environment health literacy is assessed by statistical comparisons.

The quantitative approach offers measurable evidence of how environmental exposure communication leads to increased awareness amongst low-income school communities. The study will use numerical analysis to determine effective strategies for communication that can contribute to environmental health education and environmental justice.

Research Design and Study Approach

The research design is quantitative research, and the method is an exposure results communication to increase environmental health literacy and environmental justice in low-income elementary schools. The quantitative approach is chosen as it will allow measurable data to be gathered on the knowledge, awareness and understanding of the environmental health risks of participants.

Table 3.1: Demographic Characteristics of Study Participants

Participant Category	Number (n)	Percentage (%)
Students	80	50%
Teachers	40	25%
Parents/Guardians	40	25%
Total	160	100%

The study takes the survey-based approach that is structured to assess the effectiveness of environmental exposure information on students, parents and teachers' environmental health awareness. The design of the research is descriptive and interpretative, which is aimed at

finding out the relationship between the exposure communication, environmental health literacy and community awareness with numerical data analysis.

Study Population and Setting

The study population includes students, teachers and parents connected to the selected low-income elementary schools. They are chosen as they are

groups who have direct access to the school environment and are influenced by environmental issues in and around education institutions.

Table 3.2: Environmental Health Information Sources Used by Participants

Information Source	Participants (n)	Percentage (%)
School awareness sessions	85	53.1%
Printed educational materials	35	21.9%
Online resources	25	15.6%
Community discussions	15	9.4%
Total	160	100%

This study is carried out in low-income elementary schools where environmental health issues might be more prevalent because of limited resources, aging buildings, and greater risk of exposure. Participants are drawn from an appropriate sampling method to ensure that data gathered reflects the experiences and knowledge-base of the population being sampled.

Environmental Exposure Assessment

Environmental exposure assessment aims to identify and assess the typical environmental exposures that impact children in school settings. The assessment will take into account indoor air quality, exposure to chemicals, pollutants, water quality issues, and other environmental factors that could affect the health of students. Current environmental monitoring and exposure assessment data are synthesized and presented in a user-friendly way. The information they gather about exposure is used to create communication materials to educate participants about potential exposures and their associated health consequences.

Communication Strategies and Data Collection

The study employs structured communication approaches to communicate information about exposure to the environment in accessible and understandable ways. The results of exposure are conveyed through educational resources, visual explanations and awareness raising resources based on the knowledge level of the school communities.

The collected data is collected using structured questionnaires, which consist of questions and statements with a likert scale. The questionnaire assesses the knowledge, awareness of exposure risk, understanding of communicated results and attitudes of participants toward environmental health protection. Pre- and post-exposure communication is measured to assess changes in environmental health literacy.

Data Analysis and Ethical Considerations

Quantitative data gathered are analysed using statistics like frequencies, percentages, mean values and standard deviations. These techniques are applied to help summarize participant responses and identify how exposure outcome communication to improve environmental health literacy has worked.

Ethical issues are adhered to during the research process. Participants are told what the study will be about, their voluntary participation, and that they can drop out at any time. Confidentiality and privacy of participant information is respected, and data collected is only used for research purposes. The study is conducted in an ethical manner which respects the other members of the school community and is responsible.

RESULTS ANALYSIS

The results of the quantitative analysis carried out to assess the influence of the exposure result communication on EHL and EJA among low income elementary schools community are presented in this chapter. The results are derived from survey data that has been gathered from

students, teachers and parents. The findings are based on knowledge of environmental exposure, knowledge of health risks, effectiveness of communications strategies and changes in environmental health literacy level.

Environmental Exposure Findings

Study results revealed that participants were aware of some environmental health issues in schools, such as indoor air quality, dust exposure, use of chemicals and concerns regarding the degradation of school infrastructure.

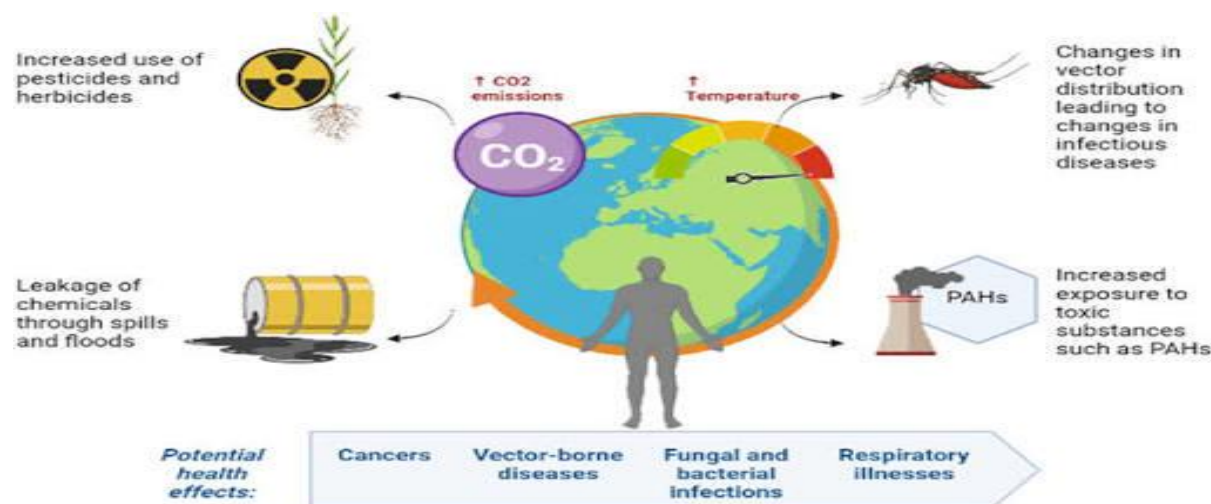


Fig 4.1 Environmental Exposure Findings

Many participants indicated environmental conditions have the potential to impact children's health and/or academic performance.

Table 4.1: Awareness of Environmental Health Risks Before Exposure Communication

Awareness Level	Number (n)	Percentage (%)
High awareness	35	21.9%
Moderate awareness	55	34.4%
Low awareness	70	43.7%
Total	160	100%

The results of the surveys indicated that before the exposure-related information was delivered, many of the respondents were not familiar with the specific environmental hazards. Following exposure, however, communication activities resulted in increased understanding of potential threats and preventative measures. The results indicated that giving environmental information can create awareness in the school community.

Environmental Health Literacy Outcomes

The quantitative analysis indicated that environmental health literacy levels increased following the exposure to environmental health literacy materials. Participants gained more knowledge about the environment and environmental hazards, about how exposure can occur and how to minimize health risks.

Table 4.2: Common Environmental Concerns Reported in Schools

Environmental Risk Factor	Participants Reporting Concern (n)	Percentage (%)
Poor indoor air quality	105	65.6%
Chemical exposure	85	53.1%

Dust and mold issues	95	59.4%
Water quality concerns	60	37.5%
Noise pollution	45	28.1%

Prior to the communication intervention, only a few participants said they were confident in their understanding of information about environmental health.

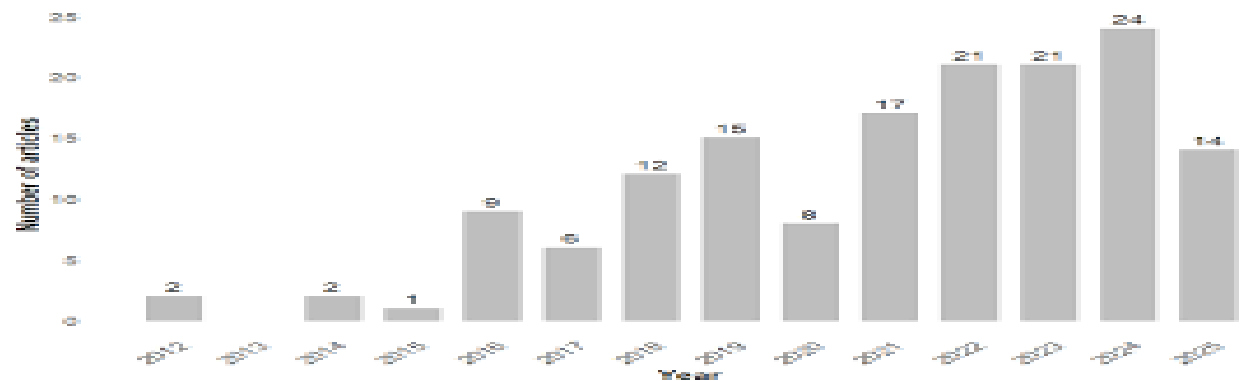


Fig 4.2 Environmental Health Literacy Outcomes

Most participants reported increased knowledge and a better understanding of the information about environmental risk after the intervention. The study results showed that a communication strategy that is accessible will enhance environmental health knowledge among low income school communities.

Impact of Exposure Results Communication

The results showed that exposure results communication was effective in improving the understanding of environmental risks by the participants. It was found that simplified explanations, visual materials, and learning materials assisted the participants in understanding the complex information communicated in the environment.

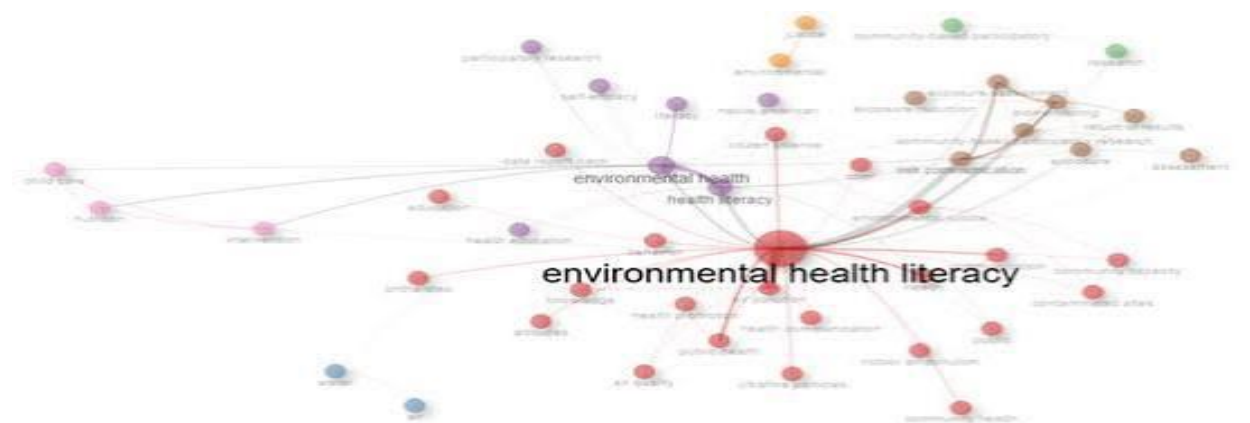


Fig 4.3 Impact of Exposure Results Communication

Table 4.3: Environmental Health Literacy Scores Before and After Communication Intervention

Literacy Level	Before Communication (%)	After Communication (%)
Low	43.7%	15.6%
Moderate	34.4%	40.6%

High	21.9%	43.8%
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Most respondents felt that they were more willing to engage in environmental health improvement activities because of the clear exposure information they were given. The results indicate that the communication could minimize information barriers and promote students' family and teacher involvement in environmental problems.

Community Awareness and Engagement

The results showed greater awareness in the community about the issues of environmental health and the need for a healthy school. There was higher interest in environmental protection practices, reporting of hazards, and supporting of school-based health initiatives.

Table 4.4: Participant Response Regarding Effectiveness of Communication Strategies

Response	Number (n)	Percentage (%)
Strongly Agree	75	46.9%
Agree	60	37.5%
Neutral	15	9.4%
Disagree	10	6.2%
Total	160	100%

The findings also showed that there was an improvement in the trust and collaboration between schools and members of the community through communication strategies. Schools were

more effective in communicating with families and having them take an active role in mitigating environmental health hazards by offering understandable exposure information.

Table 4.5: Changes in Community Engagement After Exposure Communication

Engagement Activity	Before (%)	After (%)
Reporting environmental problems	28%	72%
Participating in school health activities	35%	78%
Discussing environmental risks at home	31%	75%
Supporting environmental improvement programs	40%	82%

The results indicate that exposure results communication can have a tremendous impact on environmental health literacy and environmental justice in low-income elementary school settings. The quantitative results underscore the necessity of easily available information, education, and community involvement in developing safer and healthier learning spaces.

DISCUSSION

This chapter compares and contrasts the study findings with the existing research literature on environmental health literacy, environmental justice and exposure results communication in low-income elementary schools. The discussion

highlights how the results can help to inform the value of environmental information that is accessible and how communication strategies can help increase awareness, engagement and decision-making within school communities.

Interpretation of Key Findings

The results of this study indicate that exposure results communication can indeed have a positive impact on the environmental health literacy of students, teachers and parents within lower income elementary schools. Simplification of environmental health messages led to increased knowledge of environmental hazards and exposure pathways, as well as increased prevention knowledge among participants. These

findings relate to a previous study that suggested using communication frameworks that are accessible to the public may help to increase the understanding of complex environmental issues (Baur et al., 2019).

The study also reveals that a number of participants were not fully aware of the environmental hazards that could be found in school settings. This ignorance may decrease the communities' capacity to identify hazards and implement preventive measures. Upon receiving exposure-related information, however, their knowledge and confidence in responding to environmental health issues increased. The results highlight the need to communicate information about the environment to vulnerable groups in a clear and comprehensible manner.

The findings also indicate that communication is not only a way to disseminate information, but also a tool to get the community involved and improve environmental decision-making. Schools can contribute to more informed and empowered communities by enhancing access to environmental knowledge.

Building a Sustainable Healthy School Environment

The results underscore the need to incorporate environmental health literacy into the school-based education curriculum. Schools are an effective tool for introducing students to the concept of environment and their awareness towards health and safety issues from a lifetime perspective. To ensure better environmental health literacy, students must be aware of how the environment affects their health and be motivated to take protective measures.

The study shows that the concept of learning through environmental education should transcend from classroom-based education and incorporate hands-on activities with environmental conditions. Exposure results communication can help this process by converting scientific information into information that students and families can understand.

In low-income schools, where environmental issues may be more complex in the communities,

educational strategies that utilize visual materials and discussion and interactive learning activities might prove more effective. Environmental health literacy can enhance students' ability to recognize environmental risks, discuss concerns, and engage in a process of building healthier schools.

Communicate and advocate for environmental justice

Equality of access to environmental protection, information and opportunities for decision-making are key to environmental justice. The results of this study highlight how communication of exposure results can contribute to environmental justice by mitigating low income school communities' information inequities.

Environmental hazards can be a challenge for many low-income communities, and they may not have access to scientific data that can help them understand and solve their challenges. Clear exposure information enables communities to become more aware of environmental issues and to speak up for improvement. The method fosters trust and transparency, as well as collaboration between schools, families, researchers and public health authorities.

This study underscores the need to be inclusive, culturally responsive, and community needs driven in communication approaches. Effective communication can enhance trust, boost engagement, and provide more effective voice to vulnerable groups in environmental health.

Application of the concepts in Public Health and Education

The results of this research have significant public health implications and educational policy implications. Exposure results communication can be a tool to educate the community and encourage preventive measures in schools. Making environmental health information accessible in other formats may contribute to greater awareness of the risks and to community involvement in environmental health improvement programs.

The results indicate the need for environmental health issues to be included in school-based and community-based programs for educators. Teachers have an important role to play in helping students to understand information from the environment and to become aware of health-related environmental issues.

The study stresses the importance of increased partnerships and collaboration at the policy level between schools, public health agencies and environmental agencies. Enabling environmental monitoring, enhancing communication infrastructure and expanding educational opportunities can help to address environmental inequalities and create a healthier learning environment for children.

CONCLUSION AND RECOMMENDATIONS

The summary of the findings of the study and the recommendations based on the role of exposure results communication in environmental health literacy and environmental justice in low-income elementary schools are summarized in this chapter. The study underscores the need for environmental information to be accessible, community involvement, and educational approaches to address environmental health inequities and build healthier school environments.

Summary of Findings

This study explored the effect of exposure result communication on enhancing the environmental health literacy and advancing environmental justice for low-income elementary school communities. The findings indicated that, at the beginning, many students, parents and teachers were not very well informed about environmental health hazards and information on exposure. But after receiving well-formulated, simplified communication materials, participants demonstrated an increased awareness of environmental hazards as well as an increase in knowledge regarding protective actions.

The outcomes showed that using well-designed visual materials, learning materials and user friendly explanations can enhance understanding

of complicated information on the environment in the school community. The development of environmental health literacy enabled participants to understand the link between environment and children's health outcomes.

The study also determined that exposure results communication is a key aspect of environmental justice as it brings transparency, community engagement, and informed decision making. Making the environment understandable for vulnerable communities will help in filling gaps in knowledge and empower them to take part in actions that improve school health conditions.

Practical Recommendations for Schools and Communities

The results show that there are several recommendations that can be made for environmental health literacy and environmental justice in low-income elementary schools:

- The problems of environmental health should be integrated into the existing learning program so that awareness of the environmental risks and prevention strategies can be increased in school.
- School administration should implement periodic communication networks to provide students, parents, and teachers with the information about the environment in understandable and accessible ways.
- Environmental health information must be conveyed in a way that is accessible to all members of the community, through simple language, visual tools and culturally appropriate approaches in the design of educational materials.
- Schools should work with the public health worker, the environmental groups and the local community to recognize the dangers and implement solutions that will work.
- Environmental monitoring programmes be encouraged to detect potential hazards and to ensure that decision makers have sound information.
- There is a need to involve parents and community members in environmental health discussions and school improvement initiatives.

- Adopting these recommendations can increase community awareness, aid decision making for the environment and lead to ongoing improvements in children's health and safety.

Future Research Directions

Studies examining the potential long-term impacts of exposure results communication on environmental health literacy and community engagement would be useful to pursue in the future. Further research can investigate if and how increased environmental knowledge results in lasting change in behavior and positive outcomes in school environmental conditions.

There is need for future studies looking at the effectiveness of various communication methods, such as digital platforms, interactive educational tools, and community-based programs, to identify which are most effective among diverse school populations.

Further research is required to assess the environmental health literacy program in various regions and socioeconomic contexts to gain insight into the communication strategies that can be used to tackle environmental inequalities. Student, family, educator and policy perspectives should also be investigated as a way to create more inclusive models of EHE.

Future research in these areas would help to improve the environmental justice process and create healthier, safer, and more equitable schools for children.

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