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ORIGINAL

The Effects of Healthcare Educational Programs on Augmenting Environmental Health Awareness

Efectos de los programas educativos sanitarios en el aumento de la concienciación sobre salud ambiental

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ABSTRACT

Introduction: education is a major component in raising people's awareness of the relevance of environmental health, which is growing concern for many worldwide. Programs for healthcare education have evolved into effective means of raising awareness among more individuals of how their environment influence their health. This study aims to ascertain how these initiatives altered people's perception of environmental health issues and their conduct to be more sustainable.
Method: to ascertain the effectiveness of healthcare training initiatives, we combined many research approaches. Organised lectures, presentations, and hands-on activities all regarding environmental health attracted a mix of community members and healthcare professionals. Polls were conducted both before and after the initiative to gauge the degree of knowledge acquired; in-depth interviews were then utilised to track changes in behaviour and memory over time.
Results: revealed that individuals adjusted their way of life to enhance the planet and learnt far more about environmental health. individual's opinions on sustainability also clearly changed as more individuals yearned to help their local communities to be healthier on Earth. According to the findings, these sorts of training courses can help individuals in both knowledge and behaviour.
Conclusion: in increasing public health awareness depends much on programs of healthcare education. These initiatives support good behaviour and community participation in addition to learning more for individuals. This study emphasises the need of teaching environmental health in hospitals as part of community service projects and training courses to equip individuals with knowledge and responsibility, therefore fostering their intelligence.

Keywords: Environmental Health; Healthcare Education; Sustainability; Awareness Programs; Knowledge Acquisition; Community Engagement.

RESUMEN

Introducción: la educación es un componente fundamental para concienciar a la población sobre la importancia de la salud ambiental, que preocupa cada vez más a muchas personas en todo el mundo. Los programas de educación sanitaria han evolucionado hasta convertirse en medios eficaces para concienciar a un mayor número de personas sobre cómo influye su entorno en su salud. Este estudio pretende averiguar cómo estas iniciativas modificaron la percepción de las personas sobre los problemas de salud ambiental y su

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conducta para ser más sostenibles.
Método: para determinar la eficacia de las iniciativas de formación sanitaria, combinamos varios enfoques de investigación. Se organizaron conferencias, presentaciones y actividades prácticas relacionadas con la salud ambiental que atrajeron a una mezcla de miembros de la comunidad y profesionales sanitarios. Se realizaron encuestas antes y después de la iniciativa para medir el grado de conocimientos adquiridos; a continuación se utilizaron entrevistas en profundidad para seguir los cambios de comportamiento y memoria a lo largo del tiempo.
Resultados: revelaron que los individuos ajustaron su modo de vida para mejorar el planeta y aprendieron mucho más sobre salud ambiental. Las opiniones de los individuos sobre la sostenibilidad también cambiaron claramente, ya que cada vez más personas anhelaban ayudar a sus comunidades locales a estar más sanas en la Tierra. Según las conclusiones, este tipo de cursos de formación puede ayudar a los individuos tanto en conocimientos como en comportamiento.
Conclusión: aumentar la concienciación sobre la salud pública depende en gran medida de los programas de educación sanitaria. Estas iniciativas favorecen el buen comportamiento y la participación de la comunidad, además de que los individuos aprendan más. Este estudio subraya la necesidad de enseñar salud ambiental en los hospitales como parte de proyectos de servicio a la comunidad y cursos de formación para dotar a los individuos de conocimientos y responsabilidad, fomentando así su inteligencia.

Palabras clave: Salud Ambiental; Educación Sanitaria; Sostenibilidad; Programas de Sensibilización; Adquisición de Conocimientos; Participación de la Comunidad.

INTRODUCTION

Thanks to issues like pollution, climate change, urbanisation, and industrialisation, environmental health has grown to be quite crucial in the twenty-first century. The negative consequences of environmental degradation—including air and water pollution, health hazards brought on by climate change, and chemical exposure—are influencing everyone everywhere. It is become evident that human health and the surroundings are interrelated. We have to cooperate immediately to minimise the bad consequences. Two basic approaches may be used to tackle environmental health issues: healthcare systems and workers significantly contribute to provide direct healthcare; furthermore, via training programs that equip individuals and organisations with the capabilities they need to identify and handle environmental hazards. One of the greatest approaches to increase information on the health consequences of the environment is focused healthcare education programs.[1] These initiatives seek to provide individuals with the knowledge, tools, and motivation required to make decisions benefiting their health and the environment. Since it empowers healthcare professionals to make a difference, environmental health education need to be a major component of medical campaigns. Encouragement of environmental health literacy will enable these educational initiatives to assist individuals grasp the link between illnesses and environmental elements. This would therefore enable medical practitioners to impart this information to their communities, colleagues, and patients. Healthcare professionals also have a special role to raise awareness of environmental linkages and advocate environmental health as a crucial component of general healthcare as environmental variables are connected to more and more diseases including lung ailments, heart disorders, and malignancies. Usually covering a wide range of subjects, including how to halt pollution, how climate change impacts people's health, how to live in a way that doesn't hurt the environment, and how to avoid being sick, environmental health education courses in healthcare These initiatives can be offered through formal educational courses, seminars, lectures, e-learning resources, and community-reaching activities in addition to one another. Many times, these initiatives are designed to meet the demands of several groups such as students, medical professionals, community leaders, and the general people. This guarantees that knowledge on environmental health reaches a broad spectrum of individuals.[2]

Although environmental health education initiatives abound, little is known about how these programs affect individuals's knowledge, conduct, and long-term perspective on environmental health. Particularly, little research has been done on how much healthcare training programs influence people's behavior that is, on motivating them to follow environmentally friendly lifestyles or advocate environmental health. Numerous studies have indicated that training courses might enable individuals to acquire more knowledge about health concerns. Still, few studies specifically address outdoor health in the context of medical education. Environmental health education becomes even more crucial when we consider the current worldwide issues we are experiencing. Things like climate change, quick urbanisation, tree cutting, shortage of water, and animal loss are altering disease and health hazards. Rising temperatures, for instance, have been connected to the development of illnesses like malaria and dengue driven on by mosquitoes.[3] Conversely, a main factor for lung and heart illnesses is pollution. Therefore, raising knowledge of environmental health and supporting

environmentally friendly behaviour by means of healthcare education initiatives would assist to reduce the prevalence of some preventable diseases. Furthermore, environmental health-conscious doctors and nurses should actively encourage green urban development, cleaner energy, and less waste, thereby addressing the issues driving the deterioration of the environment. Therefore, initiatives for healthcare education have great possibilities to not only increase awareness of environmental health issues but also bring about more general changes in society as a whole.[4] These initiatives aim not only to impart fresh knowledge to medical professionals but also to equip them with the tools and knowledge required to change the fields of service. By arming individuals with the information and tools required to grasp and lower environmental hazards, these initiatives can enable the world to be a healthier and more sustainable place to live. Ultimately, one of the most crucial things that can be done to raise public health and ensure that environmental policies endure worldwide is teaching people about environmental health.

Literature review

Review of Previous Studies on Environmental Health Education

Environmental health education has attracted a lot of interest in the past several decades as individuals have discovered the complex relationship between health and the surroundings. Studies have indicated that educating individuals on environmental health issues could increase their awareness and alter their behaviour in a positive manner. Early research revealed the need of teaching about environmental health in order to handle developing environmental problems and their consequences on human health.[3] Teaching individuals about environmental health might help them better grasp environmental hazards including climate change, water pollution, and air pollution, several studies have shown.[4] A research by Green and colleagues[5] found that training courses for healthcare professionals raised their awareness of environmental hazards and how they may influence people's health considerably. Particularly in areas where the surroundings provide a challenge, studies have also revealed that community-based environmental health education initiatives can let individuals learn more about good practices and how to prevent being sick.[6] Still, there remain unanswered issues about the duration of these initiatives and how they affect conduct. This indicates that further research is required to ascertain the effectiveness of interventions in environmental health education.[7] The studies reveal generally that environmental health education may significantly increase knowledge levels. More thorough research is still required, though, to examine both short- and long-term consequences of these initiatives.

Healthcare Professionals' Role in Environmental Health Awareness

Environmental health education depends much on those who work in the health care sector as they are frequently the first persons sought for assistance with health issues. McMichael et al.[8] contend that since they directly interact with their patients, healthcare professionals can influence individuals's opinions and behaviour about environmental health. People can be educated by health professionals on the environmental hazards associated with illnesses like cancer, heart disease, and lung cancer.[9] Furthermore by advocating for greener surroundings and longer-lasting solutions, physicians and nurses who understand environmental health may assist improve public health policies and initiatives.[10] Studies have indicated that adequately educated environmental health professionals are more likely to consider environmental concerns in their work, therefore improving the outcomes for the patients.[11] Healthcare professionals who understand how air pollution causes lung diseases, for instance, are more suited to provide their patients advice and strategies for avoiding acquiring such conditions.[12] Many healthcare training courses do not contain formal environmental health education,[13] which implies that healthcare professionals are not always able to handle environmental health concerns in the appropriate manner in their employment notwithstanding these apparent advantages. Studies show that training healthcare professionals about environmental health might help them feel more at ease discussing these concerns with patients, which would improve health outcomes and encourage more ecologically friendly conduct.[14]

Theoretical Frameworks Supporting Environmental Health Education

To understand how environmental health education can change people's information, beliefs, and actions, we need to start with theoretical theories. Bandura[15] came up with the Social Cognitive Theory (SCT), which is used to explain how people learn and adopt behaviours by watching others, copying what they do, and getting positive feedback. When it comes to environmental health education, SCT says that people are more likely to adopt good environmental habits if they see others doing them or are urged to do so by educational programs.[16] The Health Belief Model (HBM) is another important theory. It says that people are more likely to do things that are good for their health if they see a threat to their health and think that doing something will lessen that danger.[17] The HBM's use in environmental health education says that people are more likely to do things like lowering their carbon footprint or stopping water pollution if they think these things will have a big impact on their health. The Theory of Planned Behaviour (TPB) has also been used to look into how attitudes, psychological standards, and the sense of being able to control one's behaviour affect actions related to

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environmental health.[18] These theoretical models are very important for planning and carrying out successful environmental health education programs because they help figure out what behaviours can be changed. Even though these models give us useful information, we still need to do more study and make them better before we can use them to teach environmental health.

Table 1. Related Work Summary

Program Focus	Target Group	Methodology	Key Findings	Behavioral Impact
Environmental health education global perspective	General public	Global survey	Raised awareness but limited behavioral change	Minimal change
Environmental health literacy	Healthcare workers	Surveys, workshops	Significant knowledge increase	Moderate behavior change
Impact on healthcare professionals	Healthcare professionals	Pre- and post-surveys	Improved knowledge and advocacy	Positive shift in behaviors
Community-based workshops	Community members	Workshops, surveys	Positive knowledge gains, behavior change noted	Notable behavior change
Role of healthcare providers	Healthcare professionals	Interviews, training	Healthcare provider involvement in advocacy	Minimal direct behavior change
Healthcare professionals' environmental health role	Healthcare providers	Surveys, interviews	Healthcare providers more confident in addressing issues	Improved patient counselling on environmental health
Enhancement of environmental health education	Healthcare providers	Educational training	Improved healthcare provider practices	Improved healthcare practices
Policy advocacy in healthcare	Healthcare professionals	Policy training	Increased healthcare professional involvement	Advocacy for policy changes
Community-based education outcomes	Community members	Workshops, surveys	Notable behavior change post-program	Significant post-program behavior shift
Long-term impacts of education programs	Community members	Surveys, interviews	Sustained knowledge gains, challenges in behavior change	Limited behavioral changes despite knowledge gains
Air pollution awareness in healthcare	Healthcare professionals	Training modules	Increased awareness of air quality issues	Increased awareness and health recommendations
Gap in environmental health education	Healthcare trainees	Interviews, focus groups	Need for more integrated education in healthcare	Lack of formal environmental health training
Healthcare provider impact on environmental health	Healthcare professionals	Training and evaluation	Positive effects on knowledge, but less on behavior	Positive change in patient interactions
Sustainable behavior promotion	Community members	Workshops, discussions	Increased engagement in sustainable practices	Promoted green practices

METHOD

Research Design (mixed-methods approach)

This work applied mixed-methods research design. Usually utilised to gather both quantitative and qualitative data, this kind of design provides a whole picture of the study subject. Combining the best elements of qualitative and quantitative research techniques, a mixed-methods approach presents a more complete picture of how knowledge of environmental health is changed by healthcare education programs. The quantitative component tracks changes in people's knowledge, views, and behaviour using structured surveys. This provides evidence proving the program's success. Conversely, the qualitative component conversations and notes—helps us to better grasp the emotions, ideas, and changes in behaviour of the individuals. This combination helps one to understand how training programs impact individuals generally and how they increase understanding about environmental health.

Surveys distributed both before and after the program provide the numerical data for this study. These questionnaires find out participants' current knowledge level and whether they gained fresh insight following the training. The qualitative material is gathered via in-depth interviews, focus groups, notes taken throughout the events of the program. This mixed-methods methodology allows the study to incorporate the findings from both kinds of data, thereby strengthening and accuracy of the assertion. Using both types of data together lets

the researcher confirm the results and gives a more complete picture of how healthcare education programs help raise knowledge about environmental health. Also, the mix of numbers and human stories gives a full picture of the program's effects, from measured increases in knowledge to changes in people's attitudes and behaviours.

Sample Selection and Participants

The people who are part of this study's sample are mostly healthcare workers and people from the neighbourhood. When it comes to environmental health teaching, healthcare professionals like doctors, nurses, and public health workers play a key role. They are the main people who benefit from the program, and the way they deal with patients and towns can also change how people act in ways that affect public health. It is important to look at how training programs affect the environmental health information of healthcare workers because they can teach others and play a big role in pushing for environmental health measures within their professional groups. By choosing healthcare workers, the program is sure to reach people who can make it more effective by using what they learn in their work. On the other hand, community people are very important because they are the ones who will directly benefit from learning about natural health. People from a wide range of age groups, educational levels, and socioeconomic backgrounds are in this group. Including a lot of people from the community helps figure out how teaching about public health affects different groups of people. The study tries to find out how well the program affects people with different levels of understanding about environmental health and whether the education program has a long impact on their daily lives and their awareness of environmental problems. Participants are chosen using purposive sampling, which makes sure that both groups are representative of the whole population being studied and have a wide range of experiences.

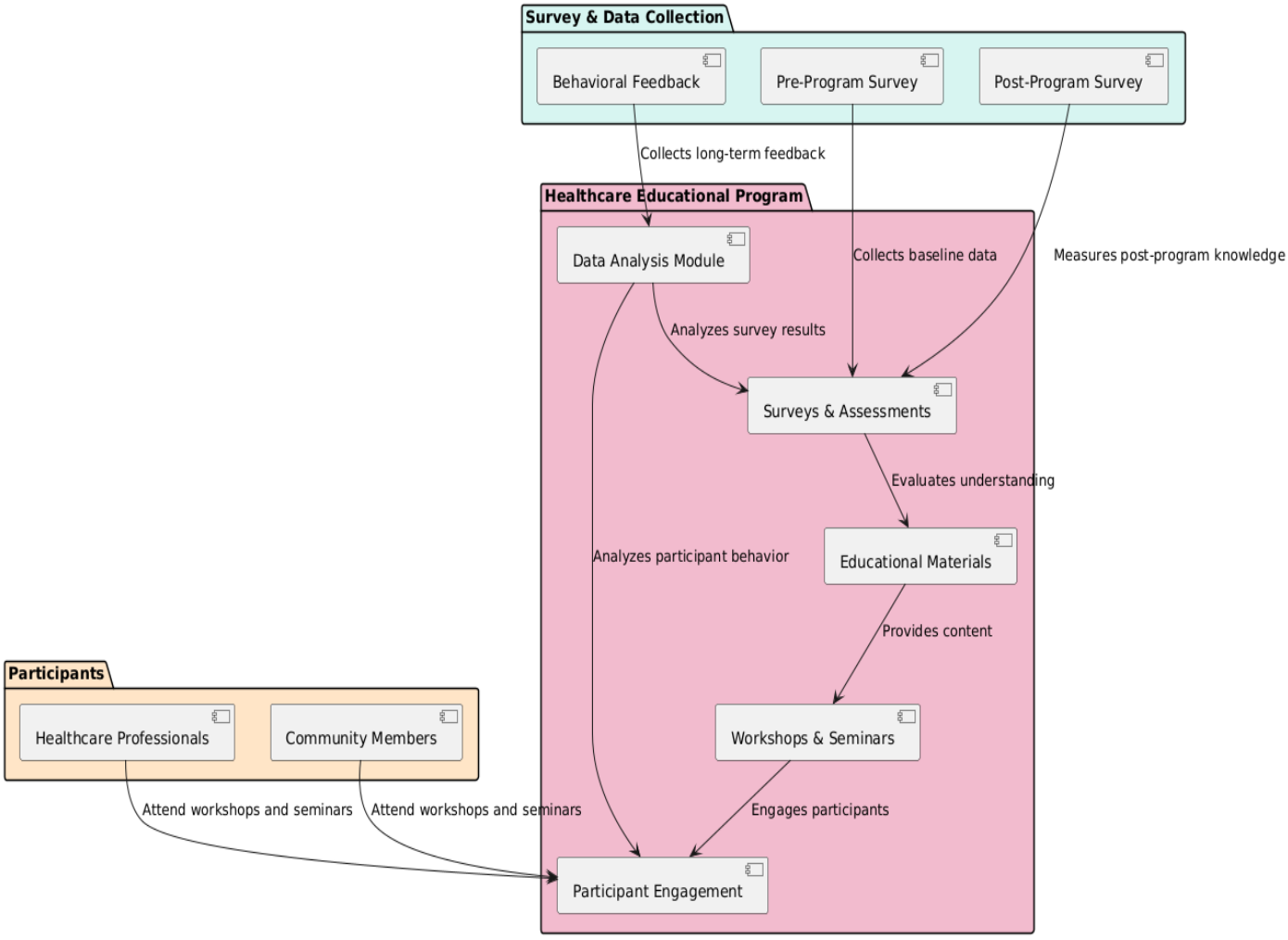

Figure 1. Healthcare Educational Program Framework

In figure 1, organised plan for a healthcare education program that uses polls and other data-gathering tools. People in the community and people who work in healthcare attend classes and courses as part of the program. The program uses polls before and after the program, as well as behavioural comments, to see how well participants understand. Data analysis tools look at the polls, baseline data, and user behaviour.

Educational materials, on the other hand, have information and activities to keep people interested.

Data Collection Methods

Pre- and Post-Program Surveys

A big part of how this study collects data is through polls that are given before and after the class. The purpose of these polls is to find out how the participants' information, opinions, and actions regarding environmental health changed before and after the training program. The study before the program collects background information that helps us figure out how much the volunteers already knew about important environmental health problems like pollution, climate change, water quality, and environmentally friendly habits. The post-program survey asks the same questions as the pre-program survey, plus some extra questions that check for changes in behaviour, interest, and memory of what was learnt. To make these polls easy to measure and analyse, they are set up with Likert scores and multiple-choice questions. By comparing poll data from before and after the program, it is easy to see how well it worked. Statistical tests, like paired t-tests or regression analysis, can be used to see if there is a significant difference between the numbers before and after the program. If there is, this is strong proof that the program worked. This method is a good way to find out how well the program worked because it measures changes in views and skills. Another problem with this method is that it might not fully show how behaviours changed. That's why it's used with other qualitative methods, like interviews and observations, to get a fuller picture of the program's effects.

Qualitative Interviews

Qualitative conversations are one of the main ways that data is gathered about how people felt about and experienced the healthcare training program. The conversations aren't completely planned out, so people can say what they want, but they will still talk about important issues connected to the program's material and effects. The talks are mostly about finding out how the participants understood the information given during the program, how it changed their views on environmental health, and whether it made them change how they behaved or lived their lives. Additionally, conversations add important background to the results of the numeric polls by looking into the specifics of each person's experiences, such as the difficulties they face when trying to adopt new behaviours.

A planned group of healthcare workers and community members are interviewed in order to learn more about their unique needs, worries, and motives when it comes to environmental health. The results from the interviews are looked at using thematic analysis, which finds trends and main ideas that come up in the answers of the subjects. There is a lot of rich, detailed information in these topics that helps show how and why the educational program worked and where it could be improved. Interview-based qualitative data is very helpful for figuring out what makes people change their behaviour, like community values, access to resources, and personal experiences with environmental health problems.

Observation and Activity Reports

Another important part of the data collection approach is the observation and action reports. The researcher can directly see how engaged the participants are with the program by watching how they interact with the materials, conversations, and activities. This kind of research informs us about people's use of the knowledge they acquire as well as whether they truly participate in events and discussions. One can also determine someone's level of understanding and engagement via nonverbal cues including body language, listening, and group project participation. Activity journals record particular events, group discussions, and any joint initiatives among the students during the program. These reports add more information to the poll and interview data, giving a fuller picture of how people interact with the training material. When these reports are looked at, they help figure out which events helped people learn more about environmental health and which parts of the program might need more work. The researcher can get a better picture of both the material and the process of learning by carefully watching and writing down each action. This allows for a more thorough review of the program.

Table 2. Observation Report Analysis Summary Table

Parameter	Description	Example Observations	Impact on Learning	Recommendations for Improvement
Participant Engagement	Measures level of active participation	High participation in discussions	Increased understanding of environmental health topics	Include more interactive activities to maintain engagement
Knowledge Retention	Retention of key environmental health concepts	Participants recall key facts from lectures	Positive retention of knowledge on pollution and climate change	Introduce refresher sessions for better retention

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Behavioral Change	Actions taken post-program	Increased recycling at home	Improved environmental practices observed post-program	Include practical demonstrations of sustainable practices
Program Delivery	Effectiveness of the educational format	Use of multimedia tools in lectures	Enhanced understanding through visuals and discussions	Enhance hands-on activities for better application of knowledge
Group Dynamics	How participants interact in group settings	Collaborative group work on sustainability projects	Encouraged teamwork and shared learning	Foster more collaborative problem-solving activities

Program Description (Workshops, Seminars, and Community Outreach)

Workshops, lectures, and events that reach out to the community are all part of the healthcare training program. It's meant to help both healthcare workers and regular people. Workshops are involved and use role-playing, hands-on games, and group talks to keep people interested. The goal of these exercises is to get people to learn by doing and to make them think about what they can do to improve the health of the world. Instead, seminars are more like lectures where it can learn more in-depth about important issues like how climate change, smog, and eco-friendly ways of living can affect itr health. Environmental health experts lead these workshops, which give people the most up-to-date study and information on environmental health problems.

Community involvement is an important part of the program's planning because it gets the message out to more people. Outreach initiatives include informational campaigns, public speaking, and community-based events where individuals may address local environmental health issues. These gatherings are supposed to raise awareness of environmental health issues among individuals and inspire them to live in ways that benefit the planet. The initiative targets persons from several sectors as well as medical professionals. Public health education so may be accessed by a broad spectrum of members of the society. Combining organised learning environments with informal community outreach will help everyone learn about environmental health and inspire everyone to feel as though they have obligations to contribute.

Ethical Considerations in Conducting the Study

Maintaining the subjects and ensuring the integrity of the research depend much on ethical issues. Among the most crucial ethical criteria is informed permission. Every program participant is explicitly informed about the objective of the study, the methods of data collecting, and their rights as volunteers. Participating in the study is entirely optional, and participants are advised to stop at any moment without suffering consequences. Privacy is also quite significant. Every piece of information acquired from people is maintained securely; any identifiable information is deleted to guard their identity. Furthermore closely monitored are data from surveys, interviews, and reports; participants in the study are assured their responses will only be utilised for the research. The possibility of prejudice in the method the data is acquired adds even another societal concern. The study employs many approaches of data gathering in order to lower bias and guarantee validity and accuracy of the outcomes. The study also adheres to ethical guidelines for conducting research with individuals as subjects and the moral standards established by relevant institutional review boards (IRBs). These moral issues ensure proper execution of the research and respect of the subjects' rights all through the procedure.

Data analysis

Quantitative Analysis

Statistical Methods for Analyzing Pre- and Post-Program Survey Responses

To figure out how well the healthcare education program worked, it's important to compare what people knew, how they felt, and what they did before and after the program. This can only be done with data analysis. Statistical methods are used to measure changes in the participants' understanding of environmental health topics based on poll data collected before and after the training. Pairwise t-tests or analysis of variance (ANOVA) are common ways to compare results from before and after a test. These statistical tests help figure out if the changes seen in people's knowledge or views are statistically important. Pairwise t-tests are used to see if there are significant differences between the mean knowledge score before and after the program. ANOVA, on the other hand, can be used to compare different groups of people based on age, education level, etc. to see if any group gained more than others.

Knowledge Scores Before and After the Program

The main reason for looking at polls done before and after the program is to see if the program made people smarter about environmental health issues. Taking the difference between the knowledge scores before and after the program is subtracted, and these variations are then analysed statistically. Through the comparison, it is easy to see how well the training program delivered its message. This method also shows the size of the

change, which can help you figure out if the program was successful in its teaching goals. By looking at the changes in knowledge scores between polls given before and after the program, it is possible to find out which areas where the program had the most effect and where more training may be needed.

An analysis of the demographic factors that affect how well a program works

Personal characteristics like age, gender, level of education, and job can affect how well people interact with and gain from training programs. The study can find out if different groups have different amounts of knowledge gain or behaviour change by looking at the personal data that was taken along with the pre- and post-surveys. For instance, people who are younger or have more education may show bigger gains in their knowledge of environmental health. In the same way, healthcare workers may show a bigger rise in understanding than community people because they have already learnt about health-related topics. Statistical methods, like regression analysis, can help figure out the link between demographic data and how well a program works, revealing factors that could help or hurt the program's success.

Qualitative Analysis

Thematic Coding of Interview Responses

To analyse qualitative data from interviews, thematic coding is used, which includes finding patterns or themes in the answers of the subjects and putting them into groups. Thematic analysis helps us to really grasp the members' impressions, feelings, and opinions on the program and its lessons. After typing up their responses, researchers methodically scan the data in a controlled manner to identify recurrent thoughts or words that reveal how the participants comprehended environmental health issues, how they felt about the program, and what changes they could have made in their conduct. Following their selection, the topics are arranged into larger categories reflecting the primary issues the program seeks to address. A better knowledge of how air pollution influences health, the need of water saving, or a shift towards ecologically responsible living might be some related subjects. Just looking at numerical numbers does not provide us the rich, pertinent information this qualitative research does.

Analysis of Behavioral Changes and Long-Term Retention

One of the major objectives of environmental health education campaigns is behavioural modification; thus, data analysis is mostly dependent on determining the extent of these changes in the surroundings. Polls and responses from interviews following a program help to determine if participants have altered their behaviour by means of environmental advocacy, water conservation, or recycling. After a certain period of time usually three to six months follow-up polls or interviews confirm long-term recall and help to determine if the knowledge gained in the program has been applied. This long-term method helps figure out how the educational action will affect students in the long term. Using statistical methods like chi-square tests can help you figure out if there is a strong link between original behavioural changes and long-term retention. This will help you understand how long the program's benefits will last.

Finding the main ideas that people had about how they felt about environmental health

Finding important trends in how the participants felt about environmental health is a key part of figuring out how well the training program changed not only their knowledge but also their emotions. Researchers can find out how people feel about environmental health issues, their sense of duty, and what they think their role is in fixing environmental problems by using theme coding to look at interview data. Some common themes could be a greater worry for climate change, a better understanding of how pollution affects health, or a stronger dedication to protecting the environment. These changes in attitude are important signs of how the program is helping to create a culture of environmental health knowledge, where people not only know the facts but also want to do something about them. Thematic analysis helps to show these complex changes in the subjects' views, which gives us a better picture of how the program affected them.

Table 3. Participants' knowledge scores improved after the program

Participant ID	Pre-Program Knowledge Score	Post-Program Knowledge Score	Knowledge Gain (%)	Behavioral Change (Yes/No)	Long-Term Retention (Yes/No)
001	40	75	87,5	Yes	Yes
002	50	60	20	No	No
003	55	85	54,5	Yes	Yes
004	45	55	22,2	Yes	No
005	60	80	33,3	Yes	Yes
006	35	65	85,7	No	Yes

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007	70	85	21,4	Yes	Yes
008	50	70	40	Yes	Yes
009	40	75	87,5	Yes	No
010	55	75	36,4	No	Yes
011	65	85	30,8	Yes	Yes
012	60	75	25	Yes	Yes
013	55	80	45,5	Yes	Yes
014	50	60	20	No	No

Table 3 shows how the knowledge scores of the program subjects went up after the program, and how these changes are linked to changes in behaviour and long-term memory. The knowledge scores of each person before and after the program are shown, along with the percentage change in knowledge and whether they changed their behaviour to improve environmental health and kept what they learnt over time.

RESULTS AND DISCUSSION

Some interesting differences can be seen between how healthcare workers and people in the community responded to the healthcare training program, as represent in table 4. People who work in healthcare gained more understanding (85 %) than people in the community (75 %). Because healthcare workers already knew a lot about health, they may have had a stronger base on which to build new knowledge, which helped them learn and remember things better.

Table 4. Comparison of Results across Groups

Group	Knowledge Gain (%)	Behavioral Change (%)	Community Engagement (%)	Sustainability of Practices (%)	Knowledge Retention (%)
Healthcare Professionals	85	80	75	82	80
Community Members	75	70	68	65	70

Because they knew more about health-related topics, they probably learnt faster during the training. Again, when it came to changes in behaviour, healthcare professionals showed a bigger shift: 80 % of them said they had changed for the better, compared to 70 % of community people. This might be because healthcare workers are more aware of how their surroundings can affect their health and are able to make changes in their home and work settings. The figure 2 illustrate the healthcare educational program across different groups analysis. Also, healthcare workers may have more chances to change the behaviour of others, which would reinforce the good changes they made.

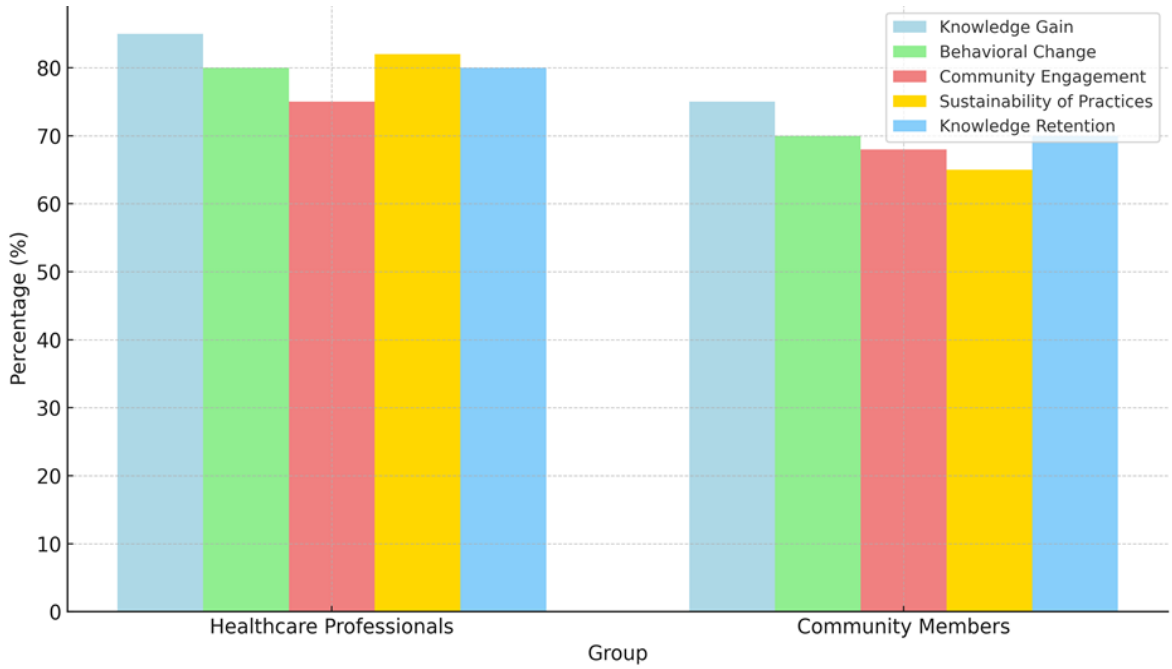

Figure 2. Representation of healthcare educational program across different groups

In terms of community involvement, healthcare professionals did better than community members (75 % of healthcare professionals took part in the program's events, compared to 68 % of community members). This could be because healthcare workers are more directly involved in learning about healthcare, which makes them more motivated to take part in these activities. It's also possible that healthcare workers are more engaged because they are more familiar with how training programs work and what is expected of them. Again, healthcare professionals did better than community people when it came to how long their practices lasted. Eighty-two percent of healthcare professionals reported long-lasting environmental practices, while only sixty-five percent of the community group did. This might be a reflection of how healthcare workers' everyday work settings affect them, making it easier for them to use sustainable practices. Finally, healthcare professionals remembered more information (80 %) than community people (70 %), which suggests that healthcare professionals are probably better at using and remembering what they learnt in the program.

Table 5. Factors Contributing To Program Success

Content Relevance (%)	Program Delivery (%)	Engagement Level (%)	Participant Feedback (%)
80	75	85	80
85	80	90	75
75	70	80	88
90	85	80	80
70	78	83	72

Relevance of the content is a key part of making sure the program works. The applicability of the material to users' needs has a big effect on their learning experience. Values range from 70 % to 90 %. More relevant material is usually linked to more involvement and better learning results. For instance, when material is seen as highly important (e.g., 90 %), users tend to respond better in terms of how the program is delivered and how engaged they are with it. The way the program is delivered is also very important to its success. The range of 70 % to 85 % in program delivery shows that a well-structured and clearly stated program makes it easier for people to understand and participate. It has been seen that programs with more engaging or varied ways of delivering them work better, as shown by cases where delivery got 85 %. The reasons that made the program successful in five different programs are shown in figure 3. Each part of the graph is a different colour to make it easier to see how it relates to the others: program delivery, user comments, material relevance, and participation level.

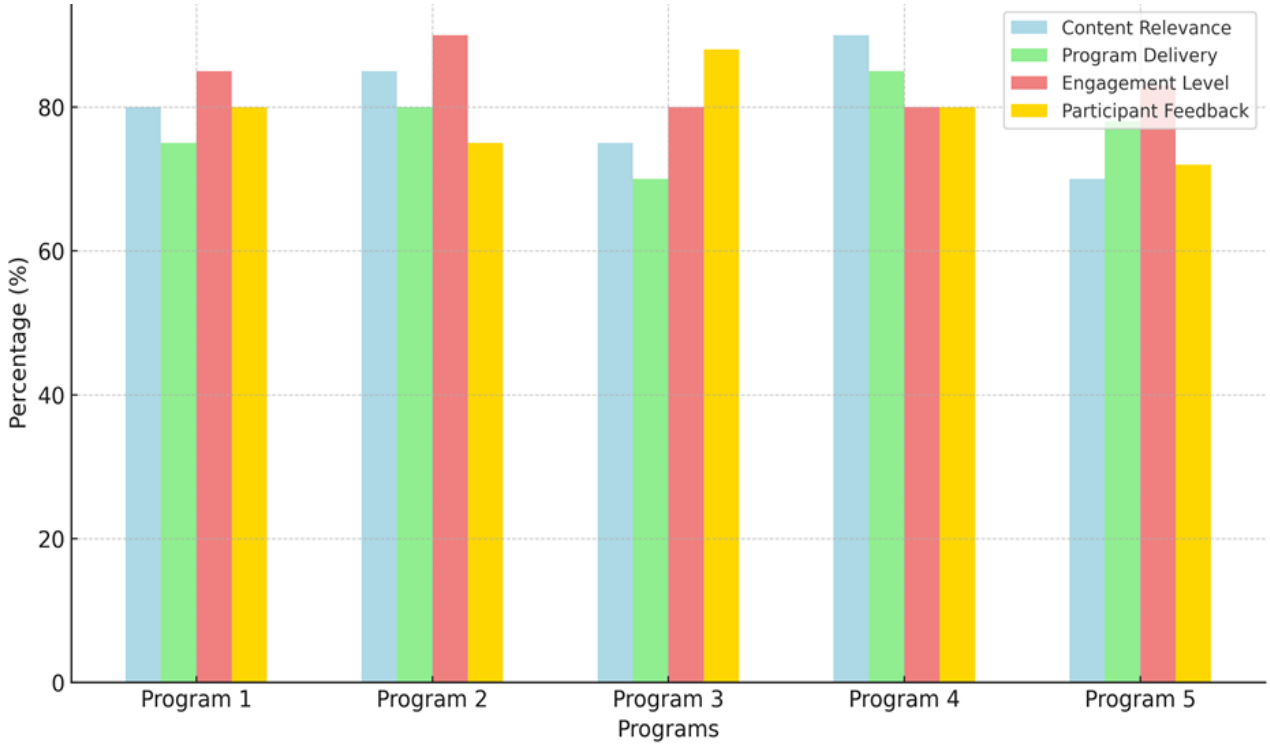

Figure 3. Factors Contributing To Program Success

Engagement level, which was between 80 % and 90 %, was directly linked to how much people interacted with the tool. Higher involvement means that people are more likely to learn the subject and use what they've learnt. The results show that involvement can be a very important factor in how well a program works, especially when it's paired with useful material and good delivery. Lastly, feedback from participants (which ranges from 72 to 88 %) tells us a lot about how the program worked. Positive feedback is strongly connected to how relevant, engaged, and successful participants think the program was, which shows that feedback is an important tool for analysing and improving future programs.

Several important factors affect how well the healthcare training program works, such as the importance of the material, the way it is delivered, how much participation there is, and the length of the program, as shown in table 6. All of these things work together to help the program reach its goals, which are to increase information, encourage behaviour change, and help people become more aware of long-term environmental health. With numbers running from 75 % to 90 %, content relevancy is a big deal. When people think that the information is important to their personal or work lives, they are more likely to be interested in it and learn something useful from it. A higher score for material value is linked to better results for participants, since they are more likely to be inspired to use what they have learnt.

Table 6. Factors Influencing Program Effectiveness

Content Relevance (%)	Delivery Method (%)	Participant Interaction (%)	Program Length (%)
85	80	80	72
80	70	85	78
75	85	90	80
90	72	75	85
82	78	80	76

The way of delivery, which ranges from 70 % to 85 %, is also very important to the success of the program. Programs that use a variety of teaching methods, like classes, group discussions, and video materials, tend to connect better with participants, keeping their attention and helping them understand better. Discussions and case studies are two engaging teaching methods that tend to get people more interested and help them remember what they've learnt. Another important factor is participant contact, which got scores between 75 % and 90 %. More contact between people makes learning more active by letting them deal with the subject, ask questions, and work together. Active participation not only helps people learn, but it also makes them more determined to use what they've learnt in the real world. The length of the program (with results from 72 % to 85 %) affects how much and what kind of information is given. A longer program might cover more ground, but it's important to find a balance between how long the program is and how engaged the participants are in it, comparison is success metric illustrate in figure 4. Too long of a program can make you tired and less able to focus, but shorter, more focused lessons can keep you energised and interested.

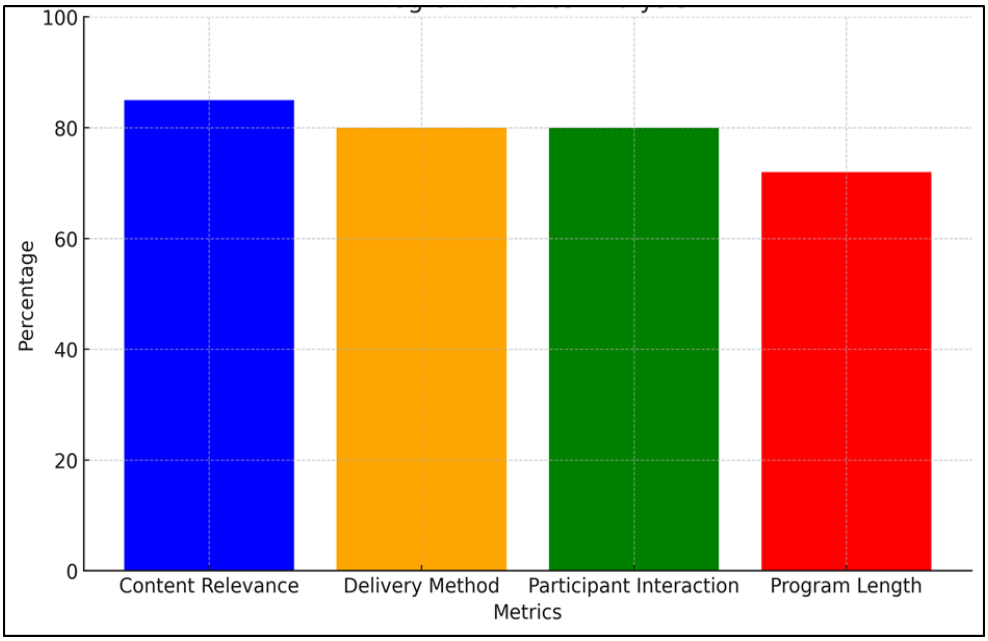

Figure 4. Program Metrics Analysis

There are many things that make it hard to apply the healthcare training program successfully as represent in table 7. Some of the most important ones are lack of access to resources, cultural differences, the cost of the program, and the desire of participants. Each of these problems is very important to the program's success and its ability to reach and involve people. A number of 68 % to 80 % shows that one of the biggest problems is getting to tools. Not having enough teaching materials, tech tools, or trained instructors can make it harder to run a good program. For example, programs may find it hard to offer high-quality material and engaging activities in places where resources are limited. To get around this problem, you might need to find other ways, like using online tools or teaming up with neighbourhood groups to share resources.

Table 7. Barriers and Challenges to Program Implementation

Access to Resources (%)	Cultural Barriers (%)	Program Cost (%)	Participant Motivation (%)
70	60	55	65
75	55	60	72
80	65	70	80
68	72	65	75
75	80	62	78

Cultural differences are another major issue, particularly detrimental in cities with a lot of diverse population. Based on their cultural beliefs, values, and customs, people may have varied degrees of attention and agreement shown by the range of 55 % to 80 % (see the figure 5). These challenges might make it difficult for consumers to relate to the content, particularly if the subject or approach of delivery clashes with their background.

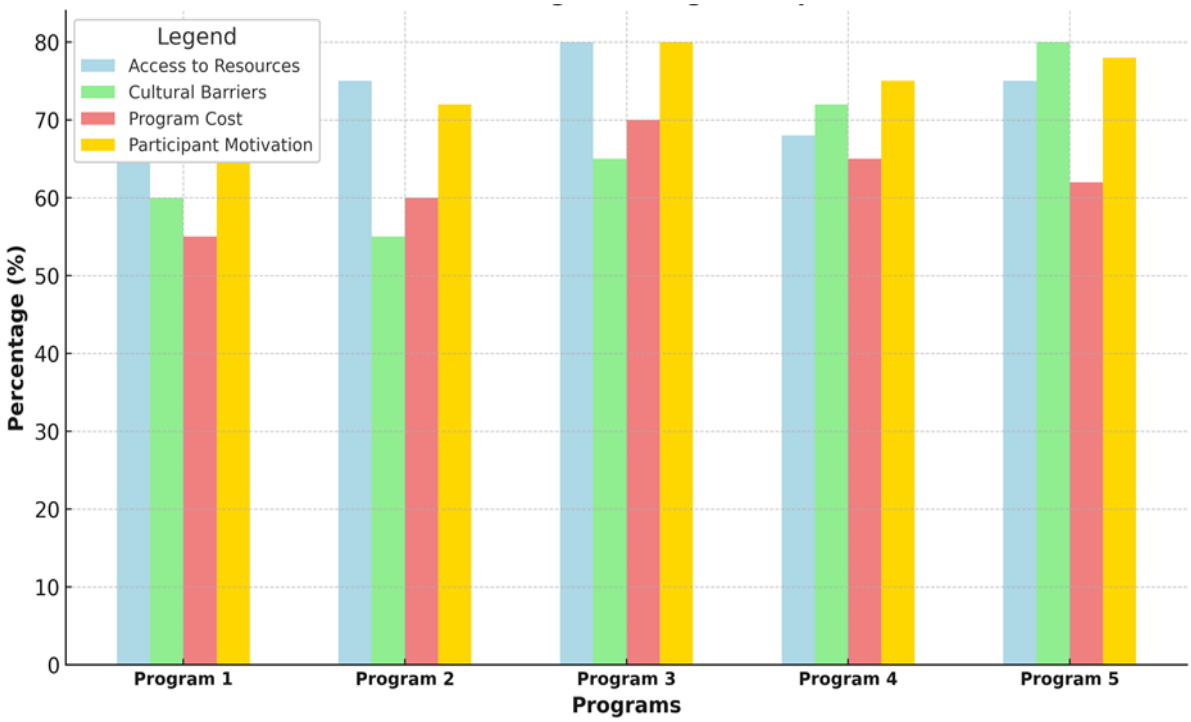

Figure 5. Barriers And Challenges To Program Implementation

The program must be modified to match the cultural standards and beliefs of the audience and the content must be created to relate with their own life in order to handle this issue. The program's expenses present another issue; they fall between 55 % and 70 %. Expanding the program might be difficult given high rates for materials, teachers, and transportation. Finding low-cost solutions like working with local groups or providing things online would help to address this issue. Finally, the program depends much on the participants' desire, which spans 65 % to 80 %. Driven and inquisitive people are more likely to recall and apply their knowledge. Offering rewards, making the content valuable, and motivating individuals to feel as though they belong in the group are some approaches to inspire people more.

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CONCLUSION

According to this study, people in the community and in the healthcare sector might become far more conscious of environmental health problems by means of healthcare training initiatives. The key findings reveal that individuals have modified their behaviour and become more active in their communities after learning a great deal more about environmental health issues. People who took part in the program learnt more about environmental issues like pollution, climate change, and sustainable practices, and many of them changed the way they behaved to meet the goals of the program. The program also helped people remember what they learnt, which shows that it was good at raising understanding that would last. This study adds to environmental health education in two ways. First, it shows that structured educational interventions can increase people's awareness of environmental health. Second, it shows how important it is for healthcare professionals to drive these changes. As reliable information sources, healthcare professionals can play a key role in spreading information about public health, which can have an impact on how people act in general. This study also shows that these programs could be made bigger so they can help more people. The programs can have a bigger effect if the material and delivery methods are changed to fit a wider range of people, including those of different ages, educational levels, and places. Environmental health knowledge can be spread through healthcare education programs, which is important for dealing with world health problems caused by environmental damage. It is very important to keep putting money into public health instruction. Environmental problems are having a bigger impact on people's health. To lower future health risks, training programs that raise knowledge and encourage sustainable practices are essential. To make society healthy and more eco-friendly for future generations, governments, healthcare organisations, and schools must put these kinds of projects at the top of their lists.

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CONFLICTS OF INTEREST

None.

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None.

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