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The Transformative Power of Environmental Education in the Consumption of Safety: The Case of a Popular Housing Estate

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ABSTRACT: Water is essential for human survival, but not everyone has access to it, so environmental education about safe water consumption is crucial to improving habits in disadvantaged communities. This study evaluated the impact of an educational intervention in a community without access to drinking water, which is supplied by surface wells. Methodology: A pre-experimental quantitative approach was used with three stages: diagnosis, educational intervention, and evaluation. Results: The educational intervention significantly improved knowledge and habits of safe water consumption ($p < 0.001$); these changes persisted after the intervention, without significant differences by gender or educational level. Conclusion: Short-term environmental education programs can positively change vulnerable populations without access to drinking water.

Keywords: Environmental education, access to clean water, safe water, public health.

I. INTRODUCTION

At present, water is a basic resource for human survival [1-3] However, inaccessibility, lack of treatment, and inadequate management hurt people's health and education [4-6]. In addition, economic growth, population growth, increasing urbanization, and the climate crisis, are factors contributing to water resource scarcity [7, 8]. Therefore, it is essential to promote responsible and conscious practices in the use of water to preserve our natural environment [9-11]. To achieve this, it is necessary to align these practices with two Sustainable Development Goals: health and well-being, clean water and sanitation. These goals seek to encourage the rational use of resources and promote social well-being, as well as a culture of long-term sustainability [12]. As a result, the development of accurate management models for the allocation of water resources, as well as the promotion of sustainable consumption habits, is crucial [13, 14].

Access to safe drinking water is a critical global issue with significant implications for public health and well-being. In Ethiopia, 16.1% of households face limited access to improved drinking water services, with spatial disparities across regions [15]. A study in Kassouala, Tchaourou, demonstrated that access to safe drinking water led to a significant decrease in diarrheal diseases, emphasizing the importance of sustainable water sources[16]. In the Lobo Basin in Ivory Coast, financial difficulties hinder sustainable access to drinking water for rural populations, leading to reliance on costly and risky alternative water sources [17]. India has shown progress in safe drinking water access, with a notable increase from 38% in 1981 to 85.5% in 2011, although regional disparities persist, highlighting the need for further improvements in water management [18]. The study in India's EAG states highlights the rural-urban gap in safe drinking water access, with urban areas generally having better coverage [19].

Ethiopia is among the countries facing challenges in providing adequate access to safe drinking water [15], 16.1% of households had limited access to improved drinking water services, with significant spatial

disparities identified between regions [20]. Furthermore, in rural Ethiopia, about 36% of the population accessed drinking water from unimproved sources, showing an uneven distribution over time and regions [21]. These findings highlight the ongoing struggle in these countries to ensure universal access to safe drinking water [22], and underscore the need for targeted interventions and resource allocation to address these disparities [23, 24].

In Latin America, according to the report, it is worrying World Bank [25], Peru is the third most water-rich country and eighth globally; however, it is concerning that only 50% of the Peruvian population has access to safe drinking water services and only 43% have properly managed sanitation facilities. According to data provided by the National Superintendency of Sanitation Services-SUNASS [26], rural areas are the most affected, because 3 out of every 100 people receive adequately chlorinated water. Human settlements are communities that do not have access to safe drinking water and are supplied by tanker trucks, as reported by [27]. Since water is not available to all, it requires citizen commitment to its care and use, and institutions are key to promoting conscious and responsible consumption [28, 29] generating socio-environmental awareness in the population towards better water management [30, 31] and this can be achieved through multidisciplinary environmental education programs [32-34].

Economic growth, urbanization, and climate change have a significant impact on water scarcity and drainage systems [35-37]. Urbanization leads to an increase in impervious surfaces, which decreases the initial extraction capacity of drainage systems, exacerbating urban flooding and reducing the efficiency of pipes due to increased stormwater runoff and pollutant loads [38, 39]. At the same time, climate change intensifies rainfall patterns, further straining these systems and increasing the frequency of urban flooding [40]. Furthermore, water scarcity induced by climate change represents a direct threat to economic development, with a strong inverse correlation observed between economic growth and water scarcity [41]. Projections indicate that the urban population facing water scarcity will increase dramatically by 2050, especially in regions such as India [42]. In arid areas, the combined effects of climate change and population growth have led to significant reductions in water availability [43]. Addressing these challenges requires investment in water infrastructure and integrated management strategies to mitigate the adverse effects of these interrelated factors [44, 45].

Economic growth significantly influences water quality in urban areas, primarily through industrialization and increased population density [46, 47]. As cities expand, human activities such as industrial production, transportation, and construction generate various pollutants, including heavy metals and organic compounds, which deteriorate water quality [48, 49]. For example, the study of Li et al [49] revealed that industrial pollutants caused severe eutrophication and heavy metal pollution. Additionally, demand for clean water increases with population growth, often outstripping the capacity of water supply systems, leading to gaps in service quality [50]. Effective solid and liquid waste management is crucial to mitigate these impacts, as untreated industrial effluents are one of the main contributors to water pollution [48]. Therefore, while economic growth can improve urban infrastructure, it also poses significant challenges in maintaining water quality, requiring strict environmental management practices [51, 52].

According to the World Health Organization (WHO) by 2025, half of the world's population will live in areas with water scarcity. Therefore, access to clean and safe drinking water is crucial for all societies and is addressed in the United Nations Sustainable Development Goal 6 (SDG 6, "Ensure access to water and sanitation for all"). Adequate quantity and quality of freshwater (including drinking water) is essential for all aspects of life and sustainable development, including food security, health promotion, and poverty reduction. Water quality is also important for sustaining economic growth in agriculture, industry, and energy generation, leading to the maintenance of healthy ecosystems [53].

That is why promoting the responsible use of water through environmental education is crucial to achieving sustainable water management, particularly in line with the Sustainable Development Goals (SDGs) [54, 55]. Research indicates that effective water education programs, especially for children, can foster a culture of conservation and responsible use [56-58]. For example, initiatives in Latin America emphasize the importance of flexible and engaging educational methods that resonate with children's realities, promoting positive emotional connections to water conservation rather than fear-based tactics [59]. Additionally, environmental education has been shown to improve knowledge and change perceptions about water management, which is vital for communities facing water scarcity [60]. However, despite its recognized importance, environmental education is often underutilized in formal water management strategies [61].

Therefore, integrating comprehensive water education into curricula can empower people to make informed decisions about water use, ultimately contributing to sustainable practices and improved water quality for vulnerable populations [62, 63].

Based on what has been described, the research question is: What is the impact of an educational intervention on the knowledge and habits of safe water in a community without access to drinking water?

II. LITERATURE REVIEW

Environmental education plays a fundamental role in the formation of a water culture based on knowledge and respect for this vital resource [64]. Through education, it is possible to promote positive values and attitudes towards water, encouraging its care and preservation [65]. Environmental education is not limited to informing or raising awareness about a problem [66]. It also encourages us to take action and invites us to change [67]. By educating people about the importance of reducing energy consumption, recycling, conserving water, and protecting biodiversity, you encourage the adoption of responsible behaviors that help mitigate human impact on the environment [68]. The involvement of civil society is key to managing and using water efficiently and sustainably [69]; provides communities with the knowledge and skills necessary to sustainably manage local natural resources, including water [70].

Environmental education is a conservation strategy that creates these synergistic spaces, facilitating opportunities for scientists, decision-makers, community members, and other stakeholders to converge [71]. Environmental education foregrounds local knowledge, experience, values , and practices, often in local settings. In this way, it encourages numerous groups, including those who may be marginalized, to interact productively with research [72], encompasses approaches, tools, and programs that develop and support environmental attitudes, values, awareness, knowledge, and skills that prepare people to take informed action on behalf of the environment [73].

Research on water security and environmental education in water management reveals critical interconnections that influence community resilience and resource sustainability [56, 74, 75]. Studies indicate that effective environmental education is essential to promote sustainable water resource management, particularly in regions facing water scarcity, such as river basins, where environmental education practices are often poor despite their potential benefits [61, 76]. Furthermore, a systematic review highlights the complex relationship between culture, education, and water management, emphasizing the need for a cultural change that positions education as a key driver in resource management strategies [77].

In low-income settings, such as rural areas, integrating water quality monitoring and community education can improve water safety management [78, 79]. However, challenges such as poverty and gender norms can impede behavioral change, underscoring the need for tailored communication strategies to improve community engagement and response to water quality risks [80]. Overall, these findings suggest that a multifaceted approach that combines education, community engagement, and effective communication is vital to advancing water safety and management practices [81].

In this context, studies have been carried out that focus on diagnosis related to both water treatment and health education related to both water treatment and health education. One of them is the study by Desye et al. [82], which highlights that the lack of adequate water treatment practices in households is due to a lack of efficient training and poor hygiene practices. In addition, other studies such as Makokove et al. [83] and Moropeng et al. [84]argue that there is a need to intensify health and hygiene education among the rural population, with special emphasis on the form of storage on the way water is stored and treated, as this is a crucial factor in the fight against infectious diseases. Gizaw et al. [85] and Sridhar et al. [86] state that the effectiveness of water, sanitation, and hygiene education is critical because it motivates communities to take care of their health; however, these studies focus on diagnosis and health education, including aspects such as personal hygiene and handwashing.

Environmental educational interventions have a significant impact on the adoption of safe water practices in urban areas with limited access to clean water [61]. Research indicates that personalized educational content can improve public acceptance of recycled water, with specific focus areas, such as implementation approaches and purification technologies, producing medium to large increases in knowledge and acceptance [87]. In urban settings, integrating environmental education with practical applications, such as decentralized

wastewater treatment systems, has proven effective in engaging youth and encouraging sustainable water management practices [88].

Additionally, educational programs targeting children have been shown to improve their knowledge and attitudes toward water conservation, leading to lasting behavioral changes [56]. However, challenges remain, such as the need for multi-sector collaboration to address barriers to access and adoption of safe water practices, particularly in resource-poor settings [89]. Overall, these findings underscore the importance of well-structured educational interventions to promote safe water practices in urban areas.

Studies on environmental education aimed at improving water consumption habits in rural populations show varying degrees of effectiveness Valenzuela-Morales et al. [56] found that an educational program for 10-year-old children in rural Mexico significantly improved students' knowledge and attitudes toward water conservation, suggesting that early interventions can foster lasting habits. Similarly, Ribeiro et al. [65] reported that an environmental intervention involving water treatment in rural Brazilian schools improved water quality and compliance with potability standards, thereby reducing health risks associated with inadequate water. However, Griebler et al. [90] noted that while their "Water Schools" program increased tap water consumption among children, the results were not statistically significant compared to a control group, indicating that mere educational interventions may not be enough without additional support. Furthermore, the investigation of Ramli [91] on eco-feedback interventions highlighted that, while they effectively reduced household water consumption, the effects were not sustained after the intervention, pointing to challenges in habit formation. In general, while environmental education can improve water consumption habits, its effectiveness may depend on the integration of supportive measures and sustained commitment.

Few studies focus on extremely vulnerable populations who lack access to water safety and are in a state of survival; for them, teaching water-saving or hand-washing habits may not be as relevant to the reality of their lives. In this sense, this study seeks to evaluate the impact of environmental education in a popular urbanization that lacks access to drinking water and is supplied by surface wells without authorization from the National Water Authority. This program includes a diagnosis of drinking water quality, an educational intervention to the population, and a subsequent evaluation, to provide the study area with the necessary knowledge to improve their habits in consuming safer water, therefore reducing the risks to their health.

Conducting relevant, high-quality scientific research and sharing the results with decision-makers is not enough to solve complex environmental and conservation problems [72, 92, 93]. Rather, we need synergistic spaces where research findings are interpreted and applied in on-the-ground contexts in ways that recognize and merge with social, political, and economic environments [71, 72].

III. MATERIAL AND METHOD

1. STUDY AREA AND SAMPLE

The study was carried out in the popular urbanization Santa Rosa de Pedro Castro Alva, located in the province of Chachapoyas in Peru. This population consisted of approximately 250 families who do not have drinking water services and are forced to dig in wet areas to store water precariously. However, the ways of storing water do not provide adequate conditions for human consumption, which in the long term represents a risk to the health of all members of these families.

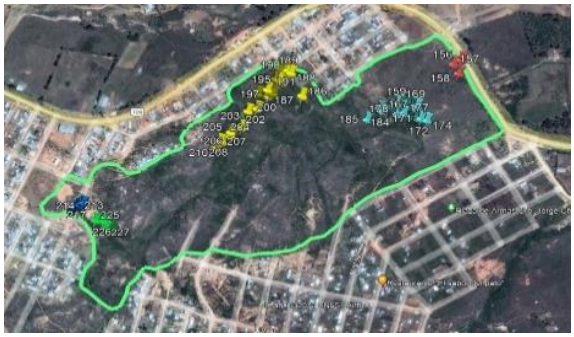

FIGURE 1. Popular urbanization Santa Rosa de Pedro Castro Alva, district of Chachapoyas, Peru

2. PARTICIPANTS

To determine the sample size, the formula corresponding to a finite population of 250 families was used, establishing a confidence level of 95% and a margin of error of 5%. As a result, a sample size of 152 families was obtained. However, it is important to note that, during the development of the educational intervention, only 65 families had continuous participation. These families were selected intentionally, ensuring that they were informed about the objectives and purposes of the research, which facilitated their commitment and active participation in the study. This selection process was carried out through prior contact, where the benefits and importance of the intervention were explained, thus promoting the collaboration of the participants.

3. STUDY DESIGN

This study had a quantitative approach of a pre-experimental nature, following the methodology proposed by [20]. The choice of a pre-experimental design is justified by the exploratory nature of the study, which seeks to evaluate the initial impact of an environmental education program in a specific context. This design is appropriate when it is not possible to implement a control group. The design consisted of a pre-test and post-test applied to a single group.

3.1 Diagnostic

To know the problematic reality of water consumption in the popular urbanization Santa Rosa de Pedro Castro Alva, four field visits were conducted. During the first visit, the problem of lack of drinking water was observed in the study community. During the second visit, the wells were mapped using the Global Positioning System (GPS), identifying 73 water wells as the main source of supply; Later the data were uploaded to the Geographic Information System software (ArcGIS version 10.5) to identify the sampling points, reaching determining 7 points. Finally, during the third and fourth visits, the water samples were collected and examined at the Soil and Water Research Laboratory (LABISAG) accredited by the National Quality Institute (INACAL-DA-Registration N°LE 170) (supplementary material).

3.2 Educacional intervention

The educational intervention consisted of four sessions (Table 1), conducted over 4 months. These sessions were held in the communal premises of Santa Rosa de Pedro Castro on Sundays at 10:00 am, lasting 120 minutes. To determine the topics to be covered in the sessions, there was coordination with the community's board of directors, taking into account their needs and the real problems of the area, in addition, each session was led by professionals specialized in health, sanitation education, and water treatment.

Table 1. Thematic framework for educational intervention

session	Topic	Dimension
01	Basic concepts and importance of water safety.	Knowledge
02	Water pollution and diseases caused by.	Knowledge
03	Correct ways of storing drinking water and their advantages.	Knowledge/habits
04	Exhibition of water test results and ways to consume safer water.	Knowledge/habits

3.3 Evaluation and test design

Three evaluations were carried out, one before the educational intervention and two after it. Regarding the subsequent evaluations, the first one was carried out at the end of the sessions in April, while the second test was conducted 15 days later, to assess the changes in the participants' knowledge and habits.

4. DATA ANALYSIS

To analyze the information, descriptive statistics were used, which included the calculation of statistics such as the mean and standard deviation. These statistics are essential to summarize and describe the

characteristics of the data, providing a clear view of the central tendency and variability of the variables evaluated.

The analysis was carried out using R software, where the Friedman test was applied, suitable for comparing more than two related groups, given that these were non-parametric data. The Memenyt post hoc test was used to identify specific differences between the groups after the Friedman test. In addition, the Mann-Whitney U test was applied to analyze the dimensions of gender and educational level, since this test is appropriate to compare two independent groups when the data do not meet the assumptions of normality.

5. INSTRUMENT

A questionnaire was used, designed by the research team following the methodological criteria. required for the development and validation of an instrument: survey design, validation by experts, and construct validation through Cronbach's alpha: for the variable knowledge of safe water it was 0.83 and safe water consumption habits were 0.81.

The instrument was structured into 03 sections: general data, 12 items to evaluate knowledge of safe water, and 12 items related to safe water consumption habits, with a Likert response scale that varies from "totally agree" with 5 points. "agree" with 4 points, "neither agree nor disagree" with 3 points, "disagree" with 2 points and "totally disagree" with 1 point.

IV. DATA ANALYSIS

1. QUANTITATIVE DATA ANALYSIS

This subsection details the statistical methods, software used, and the application of analytical tools to quantify and interpret numerical data. It may include techniques such as regression analysis, ANOVA, correlation, or other statistical tests employed for data interpretation.

2. SOCIODEMOGRAPHIC CHARACTERISTICS

Table 2. Sociodemographic characteristics

	Female (%)	Male (%)
Age		
[18-25]	7	3
[26-33]	13	11
[34-41]	7	7
[42 years and older]	31	21
Level of education		
Incomplete primary	8	7
Full primary	8	11
Incomplete Secondary	1	0
Full secondary	8	10
Incomplete university education	10	6
Full university education	17	7
Not educated	4	1
Occupation		
employee	14	10
Student	1	0
Independent	3	13
Worker	0	11
Others	4	3

professional	0	3
domestic worker	35	3

Table 2 shows the sociodemographic characteristics of the respondents, of which the majority were women, of whom only (17%) had completed higher education compared to the men who only (7%), the rest of the population had incomplete primary and secondary education. In addition, (35%) of the women were domestic workers as opposed to the men (23%) who were self-employed or blue-collar laborers.

3. IMPACT OF THE EDUCATIONAL PROGRAM

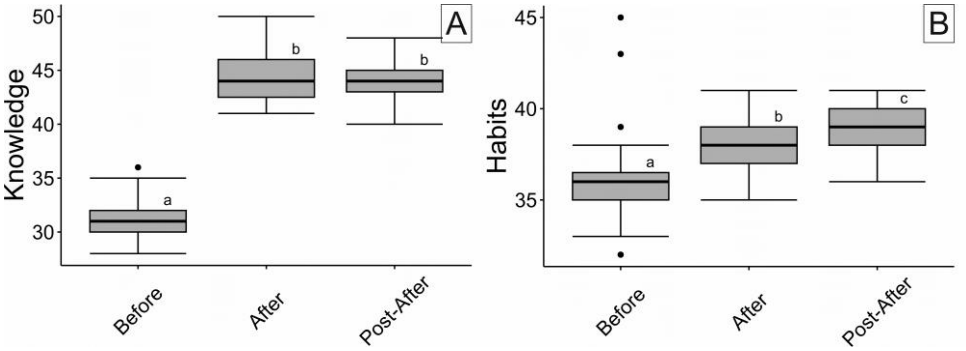

FIGURE 2**.** Impact on participants' knowledge and habits as the educational program is implemented

Regarding the level of knowledge, when applying the Memenyt post hoc test, two groups were identified: group "a" corresponding to the period before the implementation of the environmental education program, and group "b" corresponding to the period after the educational intervention (X^2=114.32, p<0.001); In addition, it was identified that the participants maintained the knowledge acquired during the environmental education program 15 days after the end of the intervention (post-after). On the other hand, concerning the habits to safe water consumption habits, three groups were identified: group "a" corresponding to the period before the implementation of the environmental education program, group "b" corresponding to the period after the educational intervention and group "c" corresponding to 15 days after the end of the educational program (X^2=98.82, p<0.001); Also, it was identified that the participants improved their safe water consumption habits 15 days after the end of the intervention (post-after).

4. KNOWLEDGE OF SAFE WATER CONSUMPTION ACCORDING TO GENDER

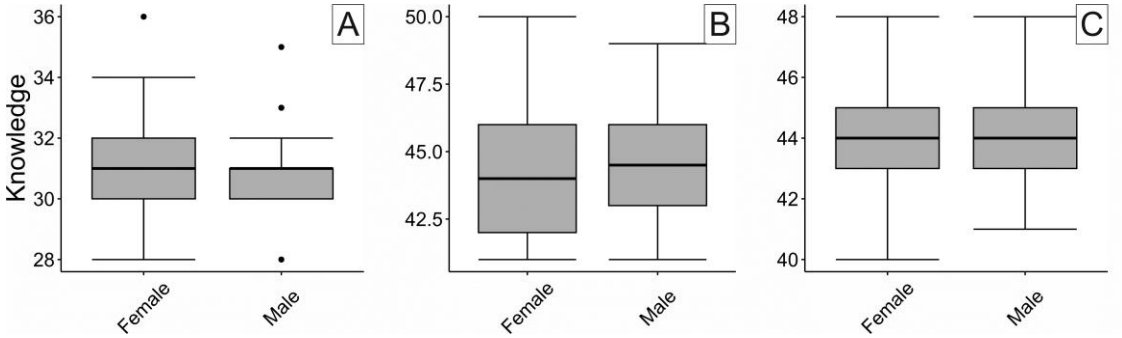

FIGURE 3. Differences in each educational assessment concerning knowledge according to the gender of the participants

The statistical test values (W=645.5, P=0.714) indicate that there are no significant differences in the degree of knowledge of water safety consumption according to the gender of the participants at the three evaluation moments: before (group A), after (group B) and 15 days after the educational intervention (group C).

5. SAFE WATER CONSUMPTION HABITS BY GENDER

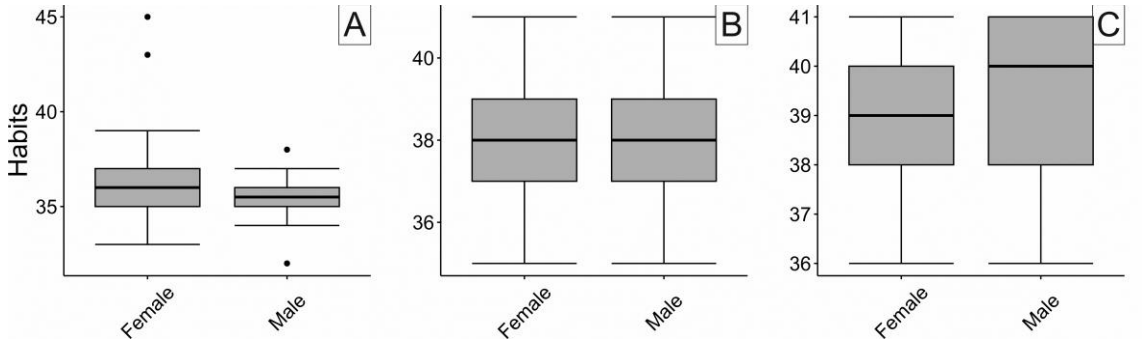

FIGURE 4. Differences in each educational assessment regarding water safety consumption habits according to the gender of participants

The statistical test values (W=702.5 P=0.298) indicate that there are no significant differences in water safety consumption habits according to the gender of the participants at the three evaluation moments: before (group A), after (group B) and 15 days after the educational intervention (group C).

6. KNOWLEDGE OF SAFE WATER CONSUMPTION ACCORDING TO LEVEL OF STUDY

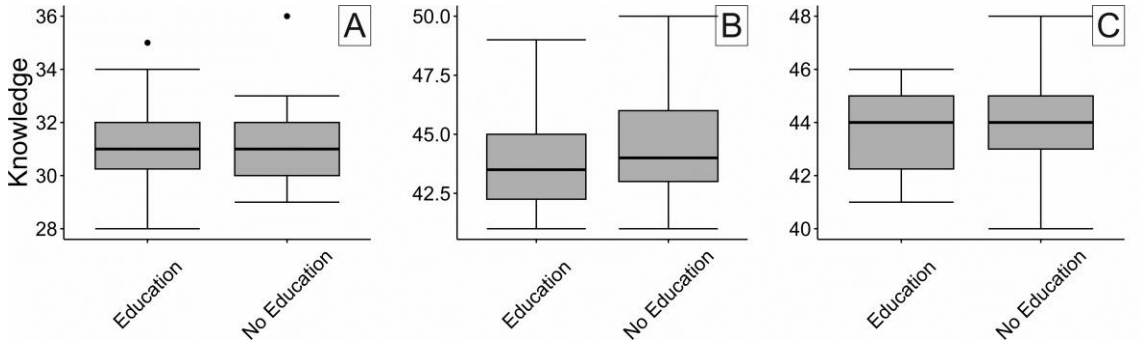

FIGURE 5. Differences in each educational assessment concerning knowledge according to the educational level of the participants

The statistical test values before educational intervention. (W=530.5, P=0.917) and after the application of the corresponding program (W=595, P=0.486); indicate that there are no significant differences in the degree of knowledge of water safety consumption at the three evaluation moments: before (group A), after (group B) and 15 days after the educational intervention (group C).

7. SAFE WATER CONSUMPTION HABITS ACCORDING TO THE LEVEL OF STUDY

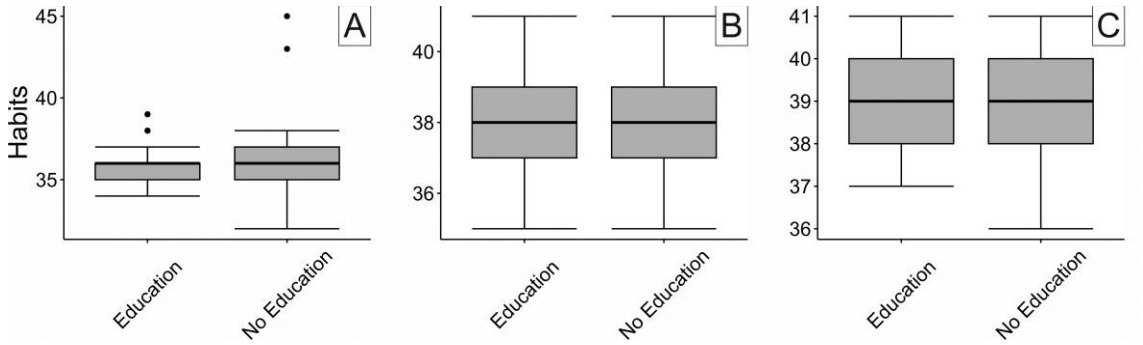

FIGURE 6. Differences in each educational assessment regarding water safety consumption habits according to the educational level of the participants.

The statistical test values (W=511.5, P=0.730) indicate that there are no significant differences in water safety consumption habits according to the educational level of the participants at the three evaluation moments: before (group A), after (group B) and 15 days after the educational intervention (group C).

V. DISCUSSION

In this study, we evaluated the impact of an educational intervention focused on water safety consumption as a strategy to improve public health in vulnerable populations; it had a significant impact on the level of knowledge of people who do not have access to drinking water and depend on surface wells as a source of supply. It is important to note that few studies focus specifically on the topic of water safety consumption, as most focus on the water cycle, personal hygiene, and hand washing; However, such findings support the effectiveness of educational interventions. One of them is the study by Valenzuela-Morales [94], which focused on water conservation, which improved the knowledge of children belonging to rural communities in Mexico that lack access to drinking water ($p < 0.001$), also after 3 months of completing the educational intervention, the knowledge acquired by the children was maintained; Similarly, in our study it was evidenced how the villagers maintained the knowledge, which indicates the effectiveness of short-term programs in vulnerable populations. It also coincides with Del Rey et al [94] study, which highlights those educational programs in Spain are effective, generating greater changes in the knowledge of students aged 8 to 16 years, and mentions that educational interventions increase the participants' intention to learn. The same happened in this study, because the citizens' intention to learn increased due to the concern and vulnerable situation in which they live.

It is important to point out that, in the dimension of knowledge of water safety consumption, the analysis of water quality was included; because, before the educational intervention, citizens did not know the composition of the water they consumed. The settlers learned of higher levels of lead and arsenic in the water, which influenced them to make positive changes in their drinking habits. These results coincide with some studies that also focused on water quality analysis; for example, the research by Boyden et al. [95]stated that water in the San Joaquin Valley of California was contaminated by arsenic. Another study by Ko & Sakai [96], indicated the presence of coliforms in water in Myanmar. These studies analyze water so that the population can transfer this knowledge to their relatives and take preventive measures; Similarly, in our study, the people who participated in the educational intervention transmitted their knowledge to their neighbors or relatives because of their concern.

On the other hand, this study also had an impact ($p < 0.001$) on the improvement of water safety consumption habits; However, it was observed that before the educational intervention, some people already practiced some habits, such as: boiling well water and using sodium hypochlorite. After the educational intervention, when it was learned that the use of sodium hypochlorite was not pertinent due to the excess of lead and arsenic in the water, it is attributed that the villagers stopped practicing this habit. In the 15-day evaluation after the end of the educational intervention, habits continued to improve, which may be due to the concern and commitment of the individuals to the care of their health. Despite finding few studies that

evaluated changes in water safety consumption habits through environmental education programs; the study by Del Rey et al. [94]was identified, which highlights those educational interventions changed the attitudes of students from 8 to 16 years of age, who began to use water better. Another study was by Gizaw et al. [85] which mentions that Water, Sanitation, and Hygiene (WASH) education contributes to improved hand washing hygiene habits ($p < 0.05$) in children living in rural Dembiya. However, the present study did not focus on hand washing hygiene habits, because the reality of the population is different; that is why this study focused on the care and storage of water safety either from rain or water tanks.

Regarding the differences found in the three moments of evaluation of the educational intervention in gender and educational level, no differences were found ($p>0.001$); however, Del Rey et al. [94] in his study of students evaluated from 8 to 16 years old, found significant gender differences, males showed greater learning from the educational intervention and had greater intention to learn, while females had a higher score in attitudes regarding water care.

The results of this study have significant implications for policymakers and community leaders, who play a crucial role in promoting the public health and well-being of vulnerable populations. Policymakers must consider integrating water quality education into communities and schools, develop water quality monitoring mechanisms, and promote campaigns that reinforce safe drinking habits. Furthermore, inter-institutional collaboration and continued research are essential to comprehensively address the problem of access to safe water, thus ensuring that citizens can make informed and healthy decisions. These actions will not only improve knowledge about safe water consumption but will also encourage a cultural change towards healthier practices in affected communities.

VI. LIMITATIONS

It is essential to recognize the limitations that have influenced family participation and data collection during the educational intervention. Firstly, resistance was observed on the part of some participants to get involved in the process, this was due to factors such as lack of time availability, distrust of the study, and the perception, that their contribution would not generate a significant impact on the improvement of water services. Additionally, meeting scheduling was limited to Sundays, which may have excluded individuals whose occupations or personal commitments prevented them from participating in activities over the weekend.

For future research, it would be beneficial to explore strategies that encourage greater community participation, such as conducting pre-surveys to identify more convenient times or implementing information sessions on different days of the week. Likewise, it could be useful to investigate families' perceptions and attitudes towards safe water consumption and environmental education, to better understand the barriers they face and how to overcome them. Finally, it is suggested to carry out long-term studies that evaluate the sustainability of changes in knowledge and safe water consumption habits, as well as their impact on the health of communities.

VII. CONCLUSION

The environmental education program has proven to be effective by improving the level of knowledge and promoting safe water consumption habits in a vulnerable population that is supplied by surface wells with water that is not suitable for human consumption. This initiative highlights the effectiveness of environmental education as a key strategy to address the problem of water supply in vulnerable communities.

Short-term educational programs have been shown to promote sustainable water consumption habits by enabling vulnerable communities to make informed decisions about water use, thereby contributing to public health and general well-being.

To implement similar programs in other vulnerable communities, it is recommended to develop educational materials adapted to local and cultural characteristics, involve community leaders in the dissemination of knowledge about safe water consumption, and establish alliances with local organizations to guarantee the sustainability and continuity of the programs.

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Author contribution

Conceptualization, Y.R.M.; methodology, E.S.B.; software, J.R.; validation, E.S.B.; formal analysis, R.C.G, and T.C.S.; investigation, E.S.B., and Y.R.M.; resources, R.C.S.; data curation, Y.R.M., and A.M.C.R; writing-original draft preparation, A.M.C.R..; writing-review and editing, A.M.C.R; visualization, R.C.S.; supervision, E.S.B.; project administration, Y.R.M.; funding acquisition, T.C.S and R.C.G All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data are available from the authors upon request.

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