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ORIGINAL ARTICLE

ENVIRONMENTAL EDUCATION AND ARBOVIROSES IN THE SCHOOL CONTEXT
EDUCAÇÃO AMBIENTAL E ARBOVIROSES NO CONTEXTO ESCOLAR
EDUCACIÓN AMBIENTAL Y ARBOVIROSIS EN EL CONTEXTO ESCOLAR

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RESUMO

Objetivo*:** analisar as práticas pedagógicas voltadas à educação ambiental com a temática das arboviroses no contexto escolar. ***Método: trata-se de um estudo qualitativo, descritivo, realizado em escolas do Ensino Fundamental. Informa-se que fizeram parte do estudo 23 participantes. Utilizou-se, para a coleta de dados, uma entrevista semiestruturada. Analisaram-se os dados pelo *software* IRAMUTEQ e, para as análises dos conteúdos textuais, foram utilizadas as técnicas de Classificação Hierárquica Descendente**.** ***Resultados:*** dividiram-se os achados em cinco classes que apresentaram as principais facilidades e fragilidades encontradas para a realização de atividades relacionadas às arboviroses, caracterização das ações, planejamento e parcerias envolvidas nessas atividades e, por fim, apresentação das principais temáticas desenvolvidas nas escolas sobre educação ambiental. **Conclusão:** percebe-se a importância da inserção da temática saúde ambiental no contexto escolar, proporcionando, ao discente, a identificação de práticas voltadas para a prevenção de arboviroses.

Descritores: Saúde Ambiental; Infecções por Arbovirus; Instituições Acadêmicas, Promoção da Saúde; Educação Continuada; Educação em Saúde.

ABSTRACT

Objective*:** to analyze the pedagogical practices directed to environmental education with the subject of arboviroses in the school context. ***Method: it is a qualitative, descriptive study, carried out in elementary schools. It is informed that 23 participants took part in the study. A semi-structured interview was used for data collection. The data were analyzed by IRAMUTEQ software and for the analysis of the textual contents the techniques of Descending Hierarchical Classification were used**.** ***Results:*** The findings were divided into five classes that presented the main ease and fragilities found for activities related to arboviroses, characterization of actions, planning and partnerships involved in these activities and, finally, presentation of the main themes developed in schools on environmental education. **Conclusion:** the importance of inserting the environmental

health theme in the school context is perceived, providing the student with the identification of practices aimed at the prevention of arboviroses.

***Descriptors*:** Environmental Health; Arbovirus Infections; Academic Institutions, Health Promotion; Continuing Education; Health Education.

RESUMEN

Objetivo: analizar las prácticas pedagógicas enfocadas en la educación ambiental con la temática de las arbovirosis en el contexto escolar. ***Método:*** se trata de un estudio cualitativo, descriptivo, realizado en escuelas primarias. Se informa que participaron 23 participantes en el estudio. Para la recolección de datos se utilizó una entrevista semiestructurada. Los datos se analizaron mediante el *software* IRAMUTEQ y, para el análisis de los contenidos textuales, se utilizaron las técnicas de Clasificación Jerárquica Descendente. ***Resultados:*** los hallazgos se dividieron en cinco clases que presentaron las principales facilidades y debilidades encontradas para la realización de actividades relacionadas con arbovirosis, caracterización de las acciones, planificación y alianzas involucradas en estas actividades y, finalmente, presentación de los principales temas desarrollados en las escuelas sobre educación ambiental. ***Conclusión:*** se percibe la importancia de insertar el tema de la salud ambiental en el contexto escolar, proporcionando al estudiante la identificación de prácticas orientadas a la prevención de arbovirusis.

***Descriptores*:** Salud Ambiental; Infecciones por Arbovirus; Instituciones Académicas; Promoción de la Salud; Educación Continua; Educación en Salud.

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INTRODUCTION

Arboviroses are scattered all over the planet, however, they present different rates of confirmed cases. A panorama of epidemics of dengue, zika and chikungunya is found in Brazil. It is explained that they are characterized by the presence of an arbovirus transmitted by arthropods such as mosquitoes, flies and ticks, and its propagation occurs mainly by the bite of the Aedes aegypti mosquito, showing greater proliferation in summer periods, because it favors egg hatching, due to the heat and rain present in that period.[1]

Dengue, zika and chikungunya are known to be emerging and compulsory diseases that constitute a public health problem in Brazil. It is warned that the numbers of suspected cases are worrying, because in 2017 alone, up to week 51, 250,853 probable cases of dengue fever, 185,550 probable cases of chikungunya fever and about 17,339 probable cases of zika fever were registered.[2]

It is believed that practical classes and alternative methodologies in schools are strategies that can contribute positively to the teaching-learning process of the student, resulting in awareness and sensitization actions to control the proliferation of the *Aedes aegypti* mosquito.[3]

The importance of population participation is highlighted, despite the existence of public policies and protocols aimed at confronting arboviroses.

It was stated, in a study, that it is not enough just to have public policies and protocols to confront arboviroses, since the population also has a fundamental role in confronting the vector. It becomes necessary for them to understand the totality of existing problems around these pathologies, so that they can help in controlling these epidemics.[4]

In face of this problem, it is necessary to invest in health promotion and prevention practices, highlighting environmental education as a strategy to confront and prevent these arboviroses, since the incidence of cases results from inadequate behaviors and habits of society linked to unfavorable environmental conditions, such as the lack of basic sanitation. In health education, the principles of a sustainable society are built, potentiating cultural and social changes that favor socio-environmental improvement and, for their development, care strategies such as health promotion, prevention and disease control can be employed.[5-6]

The school environment stands out as an open space to discuss current topics such as arboviroses, where health education can be inserted as a strategy to facilitate the learning process in order to achieve disease prevention and control. It was stated, in a study like that of Santos,[7] that the students have a knowledge about dengue, zika and chikungunya because of the media, however, this understanding is superficial and not enough for their awareness.

It is believed, in view of the above, that schools seem to be favorable environments for the development of environmental education actions with children and adolescents, bearing in mind that the knowledge acquired can lead these young people to be multipliers.

OBJECTIVE

To analyze the pedagogical practices directed to environmental education with the topic of arboviroses in the school context.

METHOD

It is a descriptive study, with a qualitative approach. It is detailed that the research took place from July to November 2018, in the municipality of Farias Brito, a Brazilian city located in the Northeast region, in the interior of the State of Ceará. Elementary schools in the urban area of the city were listed as research scenarios. It is informed that this municipality has only three elementary schools in the urban area: Maria Carmosina Pinheiro Rodrigues; Antônio Paes de Andrade and Santa Bárbara, and all participated in the study.

The sample consisted of three pedagogical coordinators and twenty teachers responsible for the development of environmental education activities and arboviroses in the elementary schools of Farias Brito. The following were elected as inclusion criteria: involvement in the planning and/or realization of educational practices about arboviroses in schools; being the pedagogical coordinator and/or teacher of the school for at least six months.

The exclusion criteria were: education professionals who are on leave or dismissed at the time of data collection, and schools that do not carry out activities focused on the subject under study. In addition, these schools had a total of 79 teachers, but only 23 teachers met the criteria.

An interview guided by a script was used. Initially, the pedagogical coordinators of each school were interviewed; who, at the time of the interview, indicated the teachers responsible for the development of activities focused on environmental education and arboviroses; then, the researcher contacted the teachers, inviting them to participate in the research and, after the acceptance, booked the interview according to the available teachers' schedules.

IRAMUTEQ (*Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires*) software was used for data organization and analysis. It is a free program that is anchored in the R software and its function is to perform textual and statistical analysis on text corpus and tables of individuals by words, ranging from simple to multivariate analysis, organizing the vocabulary in an easily understandable and visually clear way.[8]

The text corpus was constituted by the 23 interviews, which were grouped in a single text file in the *Libre Office* program, version 5.4, and for the organization of the corpus, the reading and corrections were made for adaptation in the software.

For textual content analysis, the Descending Hierarchical Classification (DHC) technique was used, in which texts were classified according to their respective vocabularies, and all of them are divided by the frequency of reduced forms.

The results of the software analysis were presented in dendogram form. The results were then interpreted and summarized by means of a detailed reading.

The research complied with the ethical and scientific requirements for research involving human beings, defined in Resolution No. 466/12 of the National Health Council / Ministry of Health, having been approved by the Research Ethics Committee of the Regional University of Cariri under the opinion number 2.844.517 /2018.

RESULTS

For the data analysis, the initial text was prepared and codified, which consists of transcribing the interviews into a set of texts called the corpus of analysis, where the questions were suppressed, keeping only the answers in the form of a single text. The text corpus was made up of 23 texts organized in a single file, which originated 23 ICU(Initial Context Unit).

The file was analyzed by Iramuteq, after the transcription performed using the Libreoffice writer package libreoffice.org, and the analysis was performed Descending Hierarchical Classification (DHC).

Descending Hierarchical Classification

The main characteristics of the analysis to be considered after processing the text corpus in Iramuteq are presented in figure 1. It is noticeable, before this one, that the analysis carried out by the software divided the corpus into 142 text segments, where, of these, retention of 108 segments was presented for the construction of the classes, the equivalent of 76% of utilization of analysis.

Number of texts	**23**
Number of text segments	142
Number of different forms	708
Number of occurrences	5063
Mean frequency of forms per segment	220.13
Number of classes	5
Text segment retention	108 in 142 (76%)

Figure 1 - IRAMUTEC analysis information. Crato (CE), Brazil, 2018.

The corpus, in the DHC, was divided by Iramuteq into five classes presented in a dendogram (Figure 2), a figure that, besides presenting the classes, shows the connection and association between them. The classes are formed by text segments that present similar vocabulary to each other and that are different, even presenting similarities, from the vocabulary of other classes.[8]

The aim was to identify and interpret in the same textual domains, naming them.

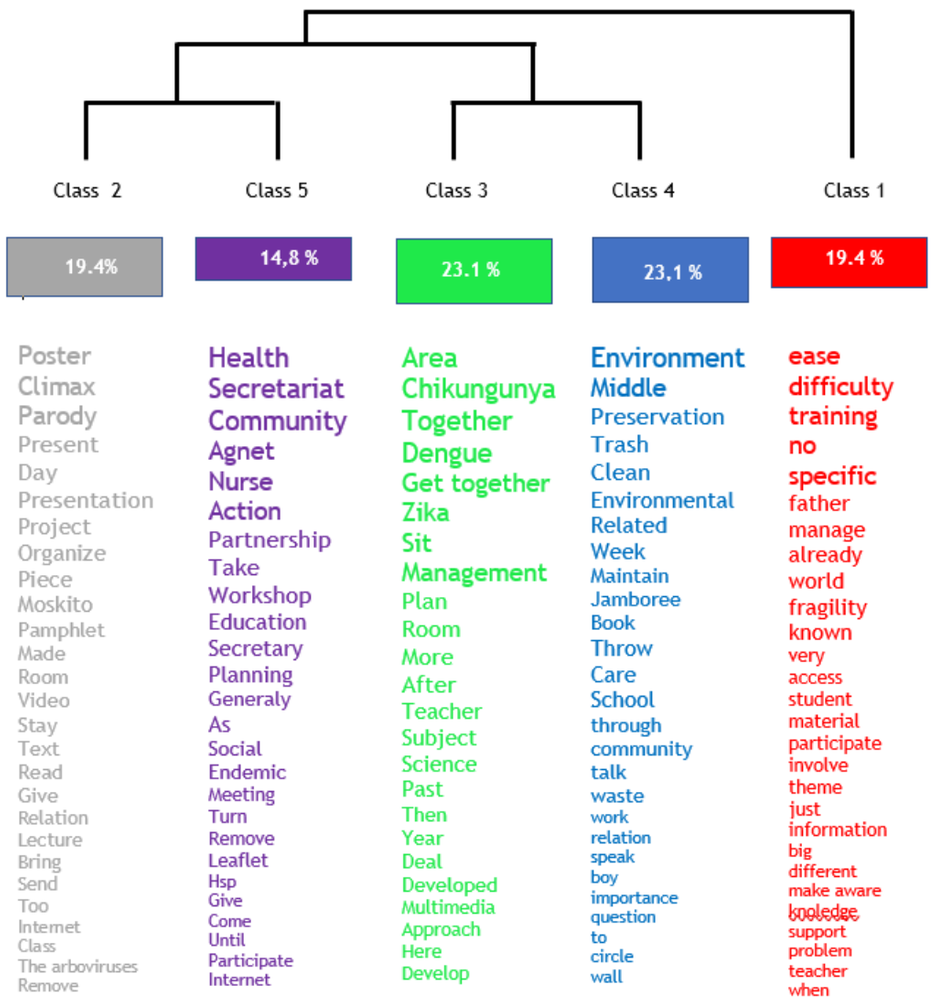

Figure 2 illustrates the interclass relations where the reading should be done from top to bottom, that is, at first, the corpus was divided into a subgroup from which class 1 resulted. It is pointed out that, in a second moment, class 1 gave rise to two new subgroups, which were subdivided, originating, in a first moment, classes 2 and 5 and, in a second moment, classes 3 and 4, which presupposes that classes 2 and 5 have a greater relationship of proximity in relation to classes 3 and 4 and vice-versa, as well as that class 1, even presenting similar vocabularies with the other classes, is the one that most distances itself from the content approached by the others in what concerns lexical issues and Elementary Context Units (ECUs) or text segments that compose the class.

Class 1: Ease and difficulties faced in the development of environmental education activities and arboviroses in the school context

It is pointed out that class 1 is equivalent to 19.4% of the text corpus and is directly related to the other classes, when a visual reading is done, in order to be responsible for giving origin to the others. However, it is noticeable when one reads the content of the same, that, although it approaches vocabularies similar to the others, it is the only class that distances itself from the textual aspects contained in the others, as it approaches aspects related to the difficulties and ease of the educational process directed to environmental education and arboviroses. In this context, obstacles and potentialities that may hinder or favor the teaching-learning process in this public are listed, besides contemplating aspects related to the process of pedagogical training focused on this subject in the schools in question.

It was raised that the most frequent and expressive words in this class were: ease; fragility; no; specific; already; get; known; a lot; access; student; material; participate; involve; thematic; information; great; different; awareness; knowledge; support; problem; teacher and when.

It helps, through some of the teachers' talks, to understand, in an illustrative way, the content of the class.

[...]I have not participated in training on this theme; I have participated with another theme, the easiness is the access to information, to the internet and the difficulty is to get the interaction of the student. (Teacher 10, score: 271.42)

[...]An ease is to be very well known; the difficulty is to get the student engaged. (Teacher 16, score: 295.32)

> *[...]ease is that it is a comprehensive topic that is found a lot on the internet addressing the subject and is easily accessible. As for the difficulty, it is the resistance on the part of some people because, like this, when we go out in a demonstration trying to make people aware, not all are receptive. (Teacher 13, score: 186.91)*

[...]not specific for dengue, they have already come to talk about the barber and Chagas disease. (Teacher 21, score: 277.67*)*

It is clear from the reading of the speeches that one of the ease in approaching these themes in the school context, according to the teachers, is the fact that they consider it known and easy to access information, which presupposes that the students already had some knowledge about it when asked about the subject.

It is described, with regard to the difficulties, that most teachers found it difficult to achieve student participation, engagement and interaction. The words "no" and "specific", cited in this class, are related to the lack of specific training for teachers to work in arboviroses in schools, which also hinders the development of these activities in this environment.

Class 2: Characterization of the development of arboviroses activities in the school context

It is equivalent to class 2 to 19.4% of the text corpus. This class is directly related to class 5, and the most frequent and expressive words in these text segments were: poster; culmination; parody; present; day; presentation; project; organize; piece; mosquito; pamphlet; confection; room; video; stay; text; reading; give; lecture; bring; send; also; internet; the arboviroses and remove.

This class presents the main strategies used by teachers and school management to develop activities related to arboviroses in schools. It is observed that these strategies seek to cover the students and the community, thus favoring the involvement of the student in the process of knowledge construction related to the theme and generating positive social impact. It helps to better understand these activities by some of the teachers' statements.

[...]this year, there was the culmination of a project; there, that day, all the rooms presented the works that had produced parodies, posters, the play, me and a student dressed in the mosquito. (Teacher 6, score: 243.15)

> *[...]I used many videos that I picked up on the internet, the videos showed the life cycle of the mosquito, the focuses, video lesson about dengue fever. I spent activities, we made paper mosquitoes, we also made parodies, we presented them at school, we made plays that they themselves looked for and staged. There was a lecture in March, it was about the environment, it was punctual. (Teacher 6, score: 118.74)*
>
> *[...]We usually do the awareness raising in the classroom, we go out ecampo with information content, distribution of posters, information leaflets for the population. Here, at school, we have the project: Dengue fever not here, a simple gesture can save! So, we follow what's in it. (Teacher 10, score: 88.00)*

It can be seen that the schools under study approach this theme in different ways, using methodologies capable of involving students as parodies, plays, reading texts, videos and posters, these strategies being used in all schools under study. It is added, however, that some other equally important and effective strategies, such as marches, making mosquitoes, producing drawings and information on radios, only one school carried out.

Class 3: Planning of arboviroses activities in the school context

It is informed that class 3 is equivalent to 23.1% of the text corpus. This class is directly related to class 4, and the most frequent and expressive words of these text segments were: area; chikungunya; together; dengue; gather; zika; sit; management; plan; room; more; later; teacher; subject; science; past; then; year; agreement; developed; multi media; approach; here and develop.

In this class, it is presented how the planning of the activities directed to the arboviroses occurs in the schools, where there is an articulation with the diverse actors of the educational process, which is characterized as essential, considering that it makes possible an exchange of information favorable to the effective development of learning.

> *[...]In the beginning, the school management contacted us (teachers in the multi-media classroom) to plan the most relevant topics to work on during the year; dengue, zika and chikungunya were listed due to the numerous cases that occurred last year here in the city and in Brazil (Teacher 09, score: 82.66)*
>
> *[...]As we already have the project called "Dengue here no, a simple gesture can save" filed, at the beginning of the year, we, from the multi-meaning room, together with the school management and some teachers, sat down and discussed about the month that we will develop this theme. (Teacher 11, score: 69.28)*

[...]Then we follow what is in it at first, if we meet with the multimedia room, school management and teachers to plan together and then each teacher plans with the students because it is necessary for them to get involved. (Teacher 10, score: 80.99)

It is clear from the above that the planning is done through school management, multimedia classroom teachers, reading or teachers of subjects such as Science, Art and Citizenship Training. The organization of activities in schools becomes quite similar: at first, the theme is worked on in class; later, materials are built on the theme and, finally, a day is chosen for the culmination of the project, where all students and teachers meet and present what has been elaborated in class on the theme.

It should be noted that only one school has a project already defined: "Dengue here no, a simple gesture can save". It is clear that the arbovirose that stands out in this school is dengue, which ends up limiting the knowledge in relation to the others, even figuring as a relevant initiative, considering that a project prints the idea of continuity.

These findings corroborate studies that emphasize that, when the main responsible for planning and development of activities related to environmental education and arboviroses are verified, it is observed that such functions, in their majority, are performed by school management and by Science and Geography teachers, with the exception of the Geography teacher who, in this study, did not stand out as responsible for actions related to this theme.[9-10]

It was evident from the results of the study that the responsibility for the development of practices aimed at environmental education was the responsibility of teachers in the multi-media classroom and subjects, namely, Citizen Formation and Art.

In this perspective, the role of managers as the main incentive for the development of actions aimed at environmental education in the school environment is highlighted. However, the need for materials to be made available so that such practices can be carried out emerges.[11]

Class 4: Partnerships involved in arboviroses activities in the school context

It is exposed that class 4 is equivalent to 14.8% of the textual corpus, and this class relates directly to class 3. It is detailed that the most frequent and expressive words of these text segments were: health; secretary; community; agent; nurse; action; partnership; take; workshop; education; secretary; planning; generally; how; social; endemic; meeting; turn; withdraw; leaflet; HSP; give; come; even; participate and internet.

In this category, the main partnerships involved in the activities aimed at arboviroses are expressed, which demonstrates the importance of articulation and formation of partnerships with other segments capable of providing adequate support in the organization and development of these activities in the school context.

[...]In this school, when we are going to work with these themes, most of the time we have the support of the Secretariat of Health and Education, CHAs, agents of endemics, HSP nurse. (Teacher 18, score: 150.19)

[...]we had partnership with the Health and Education Department of the municipality. (Teacher 02, score: 112.90)

[...]Both the Secretariat of Education and the Secretariat of Health, every year, encourage us to provide them with some activities about arboviroses. (Teacher 03, score: 104.11)

As identified in the speeches, all schools in study have a partnership with the Secretariat of Education and Health, but the support offered to them is configured as punctual activities, such as delivery of pamphlets and lectures with students and parents. The results show that the Nursing

professional does not develop actions for planning and implementing educational practices aimed at environmental education in the school environment.

Class 5: Main themes developed on environmental education in the school context

It is verified that class 5 is equivalent to 23.1% of the textual corpus, and this class relates directly to class 2. It is added that the most frequent and expressive words in these text segments were: environment; environment; preservation; garbage; clean; environmental; related; week; maintenance; jamboree; book; play; care; school; through; community; conversation; discard; work; relationship; talk; boy; importance; question; to; wheel and wall.

In this class, the main themes addressed by teachers in schools on environmental education are listed, and it is possible to verify that the activities address, in particular, aspects relating to the preservation of the environment and garbage.

[...]We work on the issue of the environment itself, the issue of hygiene in relation to garbage, preservation of the school environment, keeping it clean; we develop awareness-raising projects with families, students and the community in general (Teacher 05, score: 227.55)

[...]A jamboree was held with them about preserving the school environment; I would go out in a classroom at the end of the class to see which room was cleaner; the one that was, I would get a lot of points. (Teacher 8, score: 179.79)

[...]environmental education activities are more related to the preservation of the environment and garbage (Teacher 11, score: 171.74)

It is clear from the above that the main contents worked in schools about environmental education were: preservation of the environment; preservation of school assets; deforestation and proper disposal of garbage. It is informed that the strategies used for the development of the theme in question were: reading of texts in books; organization of jamborees on school preservation and competitions between rooms in the week of the environment.

It is important to point out that no teacher related any activity about arbovirosis as environmental education content; they only spoke about arbovirosis when asked about the existence of an educational activity on the topic.

DISCUSSION

In the results analyzed, difficulties related to the development of educational practices that approach the environmental health theme are elucidated, evidenced by the lack of planning. Thus, it becomes relevant that the teacher, during the planning of activities to be developed in the classroom, starts to consider the previous knowledge of the students, considering that this theme,

most of the times, is also approached by the media, and this can be a facilitator factor for the involvement of the student in the educational process.[12-3]

It is important, however, to consider that, although the content is widely disseminated, there may always be doubts about it, doubts that contribute to the health of the population due to the way the information is transmitted.[7]

It is also warned that knowing the main difficulties faced by educators in developing the educational process is extremely important to improve the quality of education.

The results obtained show that the main difficulties faced by educators in the development of environmental health practices in the school context are related to budget issues, physical structure of institutions, lack of human and financial resources, training and motivation for the development of projects and difficulty of interaction of students with the theme of health promotion.

It is understood the importance of developing educational practices in health in the school context as a space for discussions and debates about health and environment issues as a way to sensitize the school about the prevention and promotion of the fight against arboviroses, thus enabling this student to become autonomous in their health-disease process.[10]

It is observed that, although access to information is a facilitating aspect of this study, there are still difficulties to be overcome in order to get the student involved during the activities related to arboviroses.

In this way, it is perceived that schools use multiple educational strategies for the development of their activities and these various strategies can arise from the search to overcome the difficulties encountered in the educational process about arboviroses, trying to involve students so that they can realize their importance in the face of the eradication of the mosquito that causes these diseases.

Through the use of active methodologies in the school space, educators are able to diversify their activities through tools that encourage the student to reflect, propose solutions and build a critical vision of the social problems that surround them. It is thus inferred that the student becomes an active subject regarding the teaching-learning process and not a mere receiver of everything that is transferred by the teacher.[14-5]

It is known that educational technologies such as parodies, videos, music, interactions and conversations are satisfactory tools for the dissemination of knowledge and awareness, because

they provide the development of critical sense in the student, which results in the need to find solutions for solving environmental problems.[14]

In this context, the use of educational video in the classroom is emphasized as a powerful didactic-pedagogical tool to provide information to students, as it allows for greater learning in a clear and objective way, awakening in the student an interest in the subject that facilitates their integration to discuss the subject addressed.[3] In addition, the use of workshops and theater plays as very efficient tools to sensitize students about different topics, providing significant learning.[13] In this direction, the use of educational games as tools widely used to provide knowledge to students through their participation in the teaching-learning process is highlighted. Thus, it is observed that games can be used with the objective of overcoming some of the weaknesses that this research identified, although it did not find the games as tools used by the participants of the study.[16]

It is identified that the schools participating in this research work the arboviroses through strategies that are considered satisfactory to sensitize students about the theme and, with this, it can be inferred that they are already on the right path to overcome the difficulties encountered in the development of educational actions that aim to raise awareness among students and, thus, multiply knowledge with the objective of reducing the proliferation of the Aedes aegypti mosquito and prevent arboviroses.

Health actions are planned by the Health and Education Departments, and the demand may come from the school. The planning takes place from the identification of priorities related to the health of the educational community and the community in general, according to its real health needs.[17]

It is reminded, however, that in order to accomplish the planning and development of educational activities in an effective way, it is necessary that those responsible have knowledge of the subject approached in the practices so that there are no losses in the learning of the students.[18] The lack of specific training for educators on the subject was also evident.

Although there are subjects related to the subject in question, such as sciences, the lack of involvement of teachers and students in the implementation and planning of practices that address environmental health at school level.

A greater involvement of these actors could provide integration with other disciplines, such as science, highlighting the importance of the student understanding their role in the educational process in order to overcome the difficulties listed by teachers in getting students involved in activities.

The partnerships involved in the educational process on environmental education and arboviroses responsible for planning these activities are listed: Municipal Education Secretariat; school management and specific teachers' group.[10-1]

In this perspective, the intersectoriality in the process of prevention of arbovirosis is highlighted, considering it as a potential strategy to encourage the participation of the school community in disease prevention. The development of health education actions is seen in the rupture of the biomedical model still present in the assistance offered by health professionals.[19-20]

Health education can be an effective method for the dissemination of knowledge, since the school is an environment conducive to expanding information through students, parents and the community.[7]

The nurse, in the school environment, stands out in front of the health professionals because he is responsible for diagnosing the most relevant problems in this environment and, thus, develop actions aimed at solving problems through health education practices based on the community's needs because he is the trained professional to promote the development of teaching and health strategies that enable behavioral changes in a community.[21]

A study on the implementation of a health education intervention project for the control of dengue fever with students of a school discussed the importance of the role of the Nursing professional of basic health care as the main responsible for the development of health education practice. It becomes the intersectorality between health and education an efficient and effective strategy for health-promoting practices.[22]

In the results, however, it is observed that the participation of the Nursing professional occurs in a distant way in the development of actions related to arboviroses, since it is not included in the planning and/or development of any educational activity that would approach the subject in question in the school context. It refers, only, to the presence of the nurse on the day of the culmination of the project of a school and parade, being cited as partner of the school in other moments, such as participation in the HSP through the development of educational activities on other subjects.

Thus, environmental education is a daily practice in schools that has some themes that are more discussed in the classroom. Among them, the adequate disposal of garbage, soil and water contamination; pesticides and food; soil and its components; air, water and soil pollution, with emphasis on water.[10,23] It is clear, therefore, that the adequate disposal of garbage has also been evidenced in other literature, corroborating the findings of this study.

The deforestation, global warming and ecology are the main subjects worked on in the school environment, with themes focused on garbage, recycling and preservation as the subjects dealt with in environmental education at school.[24] It is signaled by the development of educational practices with emphasis on environmental health, for the need to create healthy environments, improving the health condition of schoolchildren.[25-6]

In this context, the importance of waste management is emphasized as a relevant measure for the control of the numerous cases of arboviroses, managing to relate environmental education and inadequate waste disposal with the incidence of arboviroses, and this goes beyond what the participants in this study managed to relate.[11]

It is clear, therefore, that the participants in this study were not able to relate environmental education to arboviroses, and it is perceived that they make a distinction between the subjects so that this is a subject articulated only in activities related to health. Thus, it is possible to reflect that these schools under study are not able to articulate the interdependence relationship between environment and health regarding the proliferation of Aedes aegypti and the arboviroses transmitted by it.

CONCLUSION

The study revealed that the subject of environmental education is essential in the face of the numerous transformations that have occurred on a global scale in recent decades, and that this should be included in the curriculum.

There are, however, some difficulties experienced in the educational process with regard to environmental education and arboviroses, namely: lack of associated teacher training and lack of interest on the part of students in the topic that constitutes a barrier to the development of educational practices related to environmental health.

It was observed that the use of active methodologies provides a greater participation and interaction of the student regarding the teaching-learning process, allowing them to develop greater autonomy and understanding of issues related to health and environment.

Finally, it is important to emphasize the need for the insertion of a multidisciplinary team in the school scenario, with educational and assistance activities about arboviroses, since they have an important role to contribute in strengthening the relationship between health and school, developing educational activities with the school community.

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REFERENCES

1. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Departamento de Vigilância das Doenças Transmissíveis. Dengue: diagnóstico e manejo clínico: adulto e criança [Internet]. Brasília: Ministério da Saúde; 2016 [cited 2019 Dec 28]. Available From: https://www.saude.gov.br/images/pdf/2016/janeiro/14/dengue-manejo-adulto-crianca-5d.pdf

2. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde. Monitoramento dos casos de dengue, febre de chikungunya e febre pelo vírus Zika até a Semana Epidemiológica 51 [Internet]. Brasília: Ministério da Saúde; 2017 [cited 2019 Aug 10]. Disponível em http://portalarquivos2.saude.gov.br/images/pdf/2018/janeiro/23/Boletim-2017-051-Dengue.pdf

3. Santos MEM, Batista WS, Oliveira JVF, Jansen ICC, Santos KFS, Santos ECR. Educational actions for fighting the mosquito aedes aegypti in a school in the metropolitan region of São Luís. Cad Pedagógico. 2017; 14(1):8-27. DOI: 10.22410/issn.1983-0882.v14i1a2017.1317

4. Wang L, Zhao H, Oliva SM, Zhu H. Modeling the transmission and control of Zika in Brazil. Sci Reports [Internet]. 2017 Aug [cited 2018 Aug 15]; 7:7721. Available from: https://www.nature.com/articles/s41598-017- 07264-y

5. Ministério do Meio Ambiente (BR), Diretoria de Educação Ambiental, Ministério da Educação (BR), Coordenação Geral de Educação Ambiental. Programa nacional de educação ambiental [Internet]. Brasília: Ministério do Meio Ambiente; 2005 [cited 2019 Dec 12].Available from: https://www.mma.gov.br/estruturas/educamb/_arquivos/pronea3.pdf

6. Arruda LP, Moreira ACA, Aragão ALA. Promoção da saúde: atribuições do enfermeiro como educador na estratégia saúde da família. Essentia [Internet]. 2014 June/Nov [cited 2019 Aug 10]; 16(1):183-203. Available from: http://essentia.uvanet.br/index.php/ESSENTIA/article/view/10

7. Santos MM, Silva FC, Muller JM. The assimilation of information passed by campaigns about aedes aegypti and your arboviruses circulation in Brazil by children of the elementary school. Rev Inova Ciênc Tecnol [Internet]. 2018 Jan/June [cited 2019 Aug 10]; 4(1):49-52. Available from: http://periodicos.iftm.edu.br/index.php/inova/article/view/231

8. Camargo BV, Justo AM. IRAMUTEQ: interface de R pour les analyses multidimensionnelles de textes et de questionnaires. Temas Psicol. 2013 Dec; 21(2):513-8. DOI: 10.9788/TP2013.2-16

9. Araújo DHS. A importância da experimentação do ensino de Biologia. 2011 [dissertation] [Internet]. Brasília: Universidade de Brasília; 2011 [cited 2019 Aug 10]. Available from: https://bdm.unb.br/bitstream/10483/1925/1/2011_DayaneHolandadeSouza.pdf

10. Monteiro IFC, Monteiro PDEBSC. O. A educação ambiental e as representações sociais dos professores da rede pública no ensino fundamental. RevBEA. 12(1):165-76. DOI: 10.34024/revbea.2017.v12.2391

11. Alecrim JS, Cotta A, Castro JM. Relationship between the actions for the dengue fever prevention and the impact caused on the cases reported between 2009 and 2010. J Health Sci [Internet]. 2016 Sept/Dec [cited 2018 Aug 15]; 18(4):286-90. Available from: https://revista.pgsskroton.com/index.php/JHealt hSci/article/view/3834/0

12. Santos KKS, Barros SMS. Percepção sobre educação em saúde e ambiental de mosquitos vetores entre escolares [dissertation] [Internet]. Maceió: CESMAC; 2017 [cited 2019 Dec 28]. Available from: https://ri.cesmac.edu.br/handle/tede/234

13. Cruz MRP. Oficina sobre as arboviroses no ensino médio: o teatro como uma ferramenta Pedagógica. Rev Vivências [Internet]. 2017 [cited 2019 Aug 10], 1(1):13945. Available from: https://periodicos.ufpe.br/revistas/vivencias/article/view/238890/0

14. Sousa GS, Machado PB, Reis VR, Santos AS, Dias AB. Educação ambiental como ferramenta para o manejo de resíduos sólidos no cotidiano escolar. RevBEA. 2013 Feb; 8(2):118-30. DOI: 10.34024/revbea.2013.v8.1792

15. Freire P. Pedagogia do oprimido. 48th ed. Rio de Janeiro: Paz e Terra; 2005.

16. Gurgel SS, Taveira GP, Matias EO, Pinheiro PNC, Vieira NFC, Lima FET. Educational games: didactic resources utilized at teaching health education classes. REME Rev Min Enferm. 2017 Nov; 21:e-1016. DOI: 10.5935/1415-2762.20170026

17. Vieira DS, Dias IKR, Sobreira CLS, Brito Junior FE, Lopes MSV. Coping with Aedes aegypti in the brazilian context. J Nurs UFPE on line. 2019;13:e241722 DOI: 10.5205/1981-8963.2019.241722

18. Becker RA, Hüller CR, Silva BA. Abordagem da educação ambiental na escola municipal Carlos Lacerda [dissertation] [Internet]. Medianeira: UTFPR; 2011 [cited 2019 Aug 10]. Available from: http://repositorio.roca.utfpr.edu.br/jspui/handle/1/466

19. Flisch TMP, Evangelista JG, Pimenta DN. The perceptions of health managers about intersectoriality: integrating health and education in the context of dengue. Rev Bras Pesq Saúde. 2018 Apr; 19(3):109-17. DOI: 10.21722/rbps.v19i3.21091

20. Lima AWS, Mongiovi VG, Marinus MWLC, Lima LS. Health education in or with the school? J Nurs UFPE on line. 2018 June; 12(6):1790-9. DOI: 10.5205/1981-8963-v12i6a236475p1790-1799-2018

21. Costa GM, Figueredo RC, Ribeiro MS. A importância do enfermeiro junto ao PSE nas ações de educação em saúde em uma escola municipal de GURUPI. Rev Cient ITPAC [Internet]. 2013 Apr [cited 2019 Aug 10]; 6(2):01-12. AVailable from: https://assets.unitpac.com.br/arquivos/Revista/62/6.pdf

22. Fernandes PS. Jovens multiplicadores de informações: projeto de intervenção de educação em saúde para o controle da dengue com alunos de uma escola municipal [Internet][dissertation]. Belo Horizonte: Universidade Federal de Minas Gerais; 2015 [cited 2019 Aug 10]. Available from: https://www.nescon.medicina.ufmg.br/biblioteca/imagem/5003.pdf

23. Giassi MG, Dajori JF, Machado AC, Martins MC. Environment and citizenship: environmental education in Schools. Rev Extensão. 2016; 1(1):1-9. DOI: 10.18616/re.v1i1.2461

24. Gasques ACF, Okawa CMP, Santos JD, Gasques EGF, Delabio F. Educação ambiental: estudo de caso em dois colégios estaduais da cidade de Sarandi (PR). RevBEA [Internet]. 2016 [cited 2019 Aug 10]; 11(5):123-38. Available from: http://revbea.emnuvens.com.br/revbea/article/view/4984

25. Jung EM, Jagals P, Brereton C, Sly PD, Kim R, Kim EM, Há EH. Children's Environmental Health Indicators in Context of the Sustainable Development Goals for Small Island Developing States. Int J Environ Res Saúde Pública. 2018 July; 15(7):1404. Doi: 10.3390 / ijerph15071404

26. Neira M, Fletcher E, Brune-Drisse MN, Pfeiffer M, Adair-Rohani H, Dora C. Environmental health policies for women's, children's and adolescents' health. Bull World Health Organ. 2017 Feb/July; 95:604. DOI: 10.2471 / BLT.16.171736

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