EDUCATIONAL INTERVENTION ON AEDES AEGYPTI MOSQUITO IN SCHOOLS:
POSSIBILITY FOR NURSING IN THE SCHOOL CONTEXT

RESUMO
Objetivo: desenvolver intervenção educativa com escolares para construção do conhecimento coletivo da temática do mosquito Aedes Aegypti. Método: estudo qualitativo, tipo intervenção, com 21 alunos matriculados em uma escola de ensino fundamental. Para a produção de dados, foi desenvolvido o seguinte roteiro: montagem de um cenário que expressasse possíveis criadouros para a reprodução do mosquito; teatro com fantoches abordando o tema; e intervenção no cenário após apresentação. Resultados: os alunos mostraram envolvidos, uma vez que houve intervenção dos mesmos na problemática. Conclusão: houve desinformação dos alunos sobre os perigos da dengue, porém a estratégia de educação em saúde pode ser confirmada por meio do conhecimento favorecendo a prevenção do mosquito da dengue. Descritores: Educação em Saúde; Enfermagem; Prevenção.

ABSTRACT
Objective: to develop an educational intervention with schoolchildren to construct the collective knowledge of the Aedes Aegypti mosquito. Method: qualitative, intervention-type study with 21 students enrolled in a primary school. For the production of data, the following script was developed: a scenario was set up to show possible breeding sites for the mosquito; theater with puppets approaching the theme; and intervention in the scenario after presentation. Results: the students showed themselves involved, once they had intervened in the issue. Conclusion: students were misinformed about the dengue dangers; however, the health education strategy can be confirmed by means of knowledge, favoring the prevention of the dengue mosquito. Descriptors: Health Education; Nursing; Prevention.
INTRODUCTION

Dengue is an endemic disease in Brazil deriving from the disorderly growth of cities. The main causes of its endemic character are the deficient supply of water, collection and inadequate destination of the garbage, causing that the breeding sites of the mosquito increase greatly. Also, the ease of movement of people between cities of different states of Brazil facilitates the circulation of the dengue virus. For these reasons, the number of municipalities infested by *Aedes Aegypti* has increased in this country.1,2

Dengue is an infectious non-contagious disease caused by an arbovirus of the genus *Flavivirus* belonging to the family *Flaviviridae*. It is clinically classified into four types: classical dengue, hemorrhagic dengue, dengue shock syndrome and a more complex form of the disease, when the individual presents great fall or absence of blood pressure added to complications, such as neurological changes, cardiorespiratory problems, gastrointestinal bleeding and pleural effusion.1,2

The World Health Organization (WHO) only recognized dengue as a disease in the 20th century when there were high endemic rates in Southeast Asia and appearance of the “hemorrhagic” form of the disease. The significant increase in cases occurred mainly because of demographic changes. Currently, there are more than 2 billion people living in areas considered to be at risk for transmission of the disease and according to current records the most affected regions are Asia, the Pacific Islands, India, China, Africa, North Australia and Latin America.3

Cases of dengue, chikungunya and zika have declined in the first three months of 2017, when compared to the same period of 2016. There was also a decline in the number of deaths from dengue, from 221 in the first quarter of 2016 to five at the same time in comparison to 2017. There were less than 91% of the severe dengue cases occurring in 2016 and the most affected regions of Brazil were Southeast (38.7%), Northeast (20%), Midwest (19%), North (15.5%) and South, with only 6.7%.4

In order for dengue control to occur, all health professionals, managers and population need to be involved, including other sectors of municipal administration, such as urban cleaning, sanitation, education, tourism and environment, among others. It is crucial to highlight that, in order to reproduce, the *Aedes Aegypti* mosquito uses all kinds of containers people usually use in everyday activities, such as bottles and disposable containers, cans, tires, plastics, containers usually found in the backyards of houses, empty land or dumps.1

Actions aimed at dengue control must achieve effective participation of each resident to eliminate existing breeding sites of the mosquito. The population has currently adopted patterns of consumption of non-recyclable products, which has generated greater production of garbage and proliferation of potential breeding sites of the mosquito’s vector. Combined with increasing urbanization, the spread of diseases such as dengue has increased. All professionals of the Family Health Teams (FHT) have an important role and contribution in the development of these actions. The fight against dengue must be planned together with municipal managers and health professionals to establish flows and protocols of care, ensuring laboratory tests and referral of serious cases when necessary, taking responsibility for these.1

With the increased the number of dengue cases, in addition to providing information, it is necessary to mobilize the population to take action in favor of a decrease in the incidence of mosquitoes. One of the ways to overcome the expansion of the vector is to mobilize the school community.

Education with a preventive approach allows greater quality and effectiveness of the actions, as well as it extends the field of action of the management of public health services. In addition, it approximates management and the population, which allows the community to be held responsible for maintaining the environment clean and free of the breeding sites of the mosquito transmitting dengue.5

Health education has been shown to be efficient as a control strategy in many vector-borne diseases.6 The importance of dengue is related to its morbidity and the need for various strategies for its control. Early educational actions, still in primary school, can be of great importance as a way of disseminating knowledge about prevention and control of the dengue mosquito, and may be of fundamental significance for parents and caregivers through the influence of students engaged in fight this disease.7

Based on these considerations, developing educational activities in the school environment by using puppet theater is relevant inasmuch it facilitates the teaching-learning process and provides health information for this population, which allows...
the sharing of knowledge in the search for solutions to the most diverse problems.

**OBJECTIVE**

- To develop educational intervention with schoolchildren to construct the collective knowledge of the *Aedes Aegypti* mosquito.

**METHOD**

This is a qualitative, descriptive and intervention-type study developed in a private school with primary school children studying in the morning shift in the city of Piancó, in the state of Paraíba, Brazil.

The intervention study is the one in which the researcher manipulates the exposure factor (the intervention) and causes intentional modification in the situation or environment in which he/she wants to discuss by using a prophylactic or therapeutic scheme. Intervention studies address treatment in a single group of subjects, in which everyone receives the intervention. They are also called before and after, in which all individuals receive the same treatment and their condition is checked before the start and after several moments of treatment. Therefore, each individual searched can be control of themselves ("before and after") in a real situation of study that is intended to be modified.8

The sample was constituted according to the following inclusion criteria:

1. Students regularly enrolled in Primary Education;
2. Students present at the moment of the puppet theater presentation.

Those students who were absent on the day of the presentation were excluded from the survey as well as the parents or guardians who did not sign the Free and Informed Consent Form.

The intervention had five moments, divided as follows:

a) Visit to the school to observe the physical structure and to choose the place for the survey with the students;

b) Organization of the chosen place with materials (buckets, vases with standing water, tires) designed to create an environment conducive to the proliferation of the dengue mosquito;

c) Observation of the students so that they were able to identify the objects in the environment, without directing the materials chosen previously;

d) Conduction of a puppet theater addressing the theme of prevention of the dengue mosquito;

e) New visit to the site so that, after the lecture, the students could identify what could favor mosquito proliferation after removing these materials from the place.

A pre-established script was used for observation, identification of materials with potential for mosquito proliferation and discussion in the search to identify what the students know about the subject and the perception about what could help in their education. The measures developed for the observation were:

a) Discussion about standing water;

b) Not leaving objects such as plant pots, tires, empty buckets and other utensils that generate possibilities for mosquito breeding.

The research began after approval by the school manager and the Research Ethics Committee of the Integrated Colleges of Patos under approval number: 65949217.0.0000.5181 and opinion number 2,007,373, by taking into consideration the ethical aspects in research involving humans, as described in Resolution No. 466/12 of the National Health Council (CNS), which regulates research involving human beings.

Twenty-one students aged between four and five years participated in the study. The topics covered were about the dengue mosquito, prevention, proliferation and symptoms of the disease. The intervention was carried out with the students in three stages, as shown in Figure 1.
The idea of working with children was due to an experience that occurred during the undergraduate course, in the discipline of Health Education, in which the educational proposal was to address a topic that is relevant today. An initial contact was established with the school principal, who promptly approved the idea in view of the need to address themes able to help changing the reality of so many families.

The school is a social space capable of transmitting general information and organized knowledge in a disciplinary way, besides being recognized as a place to disseminate ideas of good health, making it suitable for health promotion.9

The first stage consisted of a visit to the school to choose the location in which the scenario would be set. The school yard was used and various materials, such as plastic swimming pool with standing water, buckets with a little water inside, several plastic bottles thrown on the floor, tires and pots of plants were distributed in the area. Also, leaflets disclosing the combat of the dengue mosquito were fixed in the school facilities. During a week, a song with gesticulated dance was rehearsed as a form of pre-execution of the actions.

The children were welcome and dressed in clothes and masks previously made by the researchers that characterized them as dengue mosquitoes. In the first session, the students were informed about a walk they would do in the yard and they were asked to observe what types of materials they would find.

When they returned to the classroom, they were asked about the types of objects they encountered along the way, asking them to comment. This encouraged students to participate. Most reported having observed the scattered objects; however, others have not noticed any changes in the environment. Thus, health education actions should not be focused in the student’s failure; rather, the behavioral change of self-care should be stimulated, making them responsible for their actions. The strategy allowed direct contact of the schoolchildren with specific objects of breeding sites of the dengue mosquito, which generated opportunity and curiosity for the next stage: the puppet theater.

In the second stage, a puppet theater was conceived in the auditorium through a text adapted to the children, containing information about concept, transmission, symptoms, prevention and treatment. The story was told by two puppets named Grandma Mafalda and her grandson Junior. During the presentation, all children responded positively to the theater by increasing concentration and making the class more interesting. Similar studies have revealed that theater facilitates learning as it promotes greater interaction and disinhibition of students, constituting a didactic pedagogical resource relevant to the comprehensive development of the child.10

Some students had already had information about dengue, but they did not know how one can contract it, its causes and symptoms. However, after presenting the puppet theater on the subject, this situation changed and the students came to know about the dengue mosquito. The use of playful activities is one of the educational tools for transmitting new knowledge and attitudes about dengue for primary school children.11

After the theater performance, the students were led back to the schoolyard for a second walk. At this moment they were asked to point to objects that could be foci of reproduction of the mosquito. Then, there was a joint action for removing and

<table>
<thead>
<tr>
<th>Stage</th>
<th>Type of Intervention</th>
<th>Educational Details about the Educational Intervention</th>
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<tbody>
<tr>
<td>1</td>
<td>Scenario Observation</td>
<td>The students were taken for a walk in a previously prepared area. They were told to observe the whole area and the types of materials found in a way they were not induced to observe the chosen items.</td>
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<tr>
<td>2</td>
<td>Development of the puppet theater</td>
<td>A puppet theater was created through a story about the theme of the dengue mosquito prevention, addressing forms of mosquito contamination and proliferation, emphasizing materials and places more predisposing to its reproduction and the dengue symptoms.</td>
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<tr>
<td>3</td>
<td>Intervention</td>
<td>The students were taken for a new tour through the same scenario created. They were told to observe again the whole area identifying the objects that could contribute to the proliferation and reproduction of the dengue mosquito.</td>
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Figure 1. Stages of the implementation script of the educational interventions developed. Piancó (PB), 2017.

Stages developed in the group

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eliminating possible breeding sites. The educational action also confirms the importance of health professionals’ commitment to develop preventive, promotional and educational measures in order to increase the knowledge of schoolchildren, as well as of the general population.

At the end of the materials collection, the children returned to the classroom, commenting on what they had learned. They reported that they would no longer leave trash or materials in their homes that could accumulate standing water for the mosquito not to lay their eggs and be born, avoiding causing illness. At the time of leaving for their homes, all children took leaflets to deliver to their parents or guardians and the community and to tell what they had learned about the dengue mosquito that morning.

This research corroborates a descriptive study of an experience report developed in the city of Jequié (BA), Brazil, in January of 2015 by undergraduate students of the undergraduate nursing course of the Faculty of Technology and Sciences/FTC from extension activities with primary school students from 1st to 4th grades, using as tools practical activities, distribution of informative and educational material with the participation of students researched in plays with a dengue approach. The study identified that the educational lecture given by the FTC scholars was essential as the target audience became interested and interacted with the subject by showing knowledge and mastery in the prophylaxis of dengue and the best way to combat the virus. Thus, prevention and combat measures involving population participation and basic adoption of measures to prevent accumulation of water in boxes, gutters, containers of plants and tires can stop the increase in the dengue problem.

Another study developed at a municipal school of primary education in the city of Cabaceiras (PB), Brazil, was based on a participative methodology, namely the action-research, which had the objective of helping and strengthening the theater in the public primary school education to provide interaction between teacher and student, enabling that playful activities become an instrument of knowledge, which is in agreement with the previously mentioned study. The researchers point out that playful experiences foster pedagogical practices by strengthening early childhood education, signaling the right path for the theater in public schools, and thus contributing to the growth in the quality of early childhood education through playful artistic practices. In fact, theater helps children relating to others, unites people, makes the population travel in the world of imagination, and liberates ties that sometimes prevent others from even talking. When they are in the character’s “shoes”, the Self disappears and the He stays, interpreting, not reminding us of problems and discussions, living the character. So, we will always need the help of others so that we succeed in what we are going to do and that makes the children unite in pursuit of the desired goal. The work with theater in the school institution has fundamental importance in the education, since the student learns to improvise, develops socialization, creativity, coordination, memorization, orality, reading, research, corporal expression, voice, vocabulary, skills for the plastic arts, emotions, citizenship, religiosity, ethics, feelings, interdisciplinarity and it provides contact with classic works, fables and reports.

All these confirmations agree with that informed by a pedagogical teaching coordinator of projects and events of a large company. She informed us that the decision to apply theater techniques in the classroom helps in the communication of knowledge. It is a pedagogical method that promotes discussion of several themes and is, especially, efficient in helping memorization due to its participatory character, interaction between teachers/students, exposition of ideas and real learning, broadening horizons for knowledge.

The theater provides the student with a critical ability to better evaluate impressions of the outer and the inner world with their own and appropriate responses; it generates self-confidence and perspectives in walking through other paths of human curiosity, and provides comparative, efficient weapons to exert creativity. Schools can address projects including activities with artistic expressions articulated to the other fields of knowledge together with groups or communities that are still outside the social context either due to economic pressures and/or discriminatory processes and/or because they are socially excluded.

Theater work is crucial and enriching in providing knowledge, enabling research on the school reality by sharing experiences with other professionals who have different views and opinions, thus reflecting educational practices and allowing the insertion of theater as a tool within the classroom.

Theater is one of the most efficient ways of teaching students to connect imagination and

The development of this work with schoolchildren allowed us to verify the relevance of addressing health issues in the school environment. It is understood that although playful activities have a recreative and fun character, they stimulate the individual to travel through their imagination, which made this educational resource quite useful in view of the dimension of the approached theme.

This study evidenced the need to strengthen articulations between health/school in the prevention of the dengue mosquito since in most cases the school alone is unable to cover the social dimension to which the society is subject. Thus, the use of playful activities involved opportunities and challenges: opportunities to provide new methodological resources and challenges to enable fields to be explored and practiced in health care through nursing committed with autonomy of social welfare.

The conclusion is that the initiative to approach the theme with the play as a tool was a constructive, rewarding and feasible experience, although there is much to be developed in this area. The knowledge gained from this experience drives researchers to continue on this path and to face new challenges in health promotion and prevention.

REFERENCES


CONCLUSION

Although the health action has been effective, a limitation of this research was that such a tool can not be the only and absolute choice in order to achieve the much-desired eradication of the Aedes Aegypti mosquito in Brazil. Another limitation is the scarcity of works in the Brazilian literature on the subject.
Educational intervention on Aedes Aegypti mosquito...