
**ENVIRONMENTAL EDUCATION AND HEALTH AND SANITATION BEHAVIOR IN
THE CITY OF ZA-KPOTA (REPUBLIC OF BENIN)**

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ABSTRACT

Environmental issues and their impact on health are one of the major challenges to achieving the goals of sustainable development. The present research aims to contribute to the improvement of the sanitary situation of households in the city of Za-Kpota through environmental education. The methodological approach used consisted in collecting data from 319 households selected on the basis of Schwartz's method (1995). The collected data relate to the state of the environment, the epidemiological profile and the Environmental Education strategies in the study area, and have been processed with the Sphinx software. The results obtained reveal that the proliferation of infectious diseases is linked to both natural factors and the management of people's living conditions (insalubrity, poor sanitation and consumption patterns). However, several environmental education strategies are being implemented in the city to reduce infectious prevalence. These actions for the most part are unprofessional due to the extreme dispersion of the actors and the communication channels used: radio (46%), animation at the health center (17%), television (16%), discussion with friends (11%), about children (5%) and others (5%). Faced with this situation, more operational strategies have been proposed to reduce health risks related to the state of the environment in the population.

Keywords: Environmental Education, environment, insalubrity, diseases, Za-Kpota.

1. INTRODUCTION

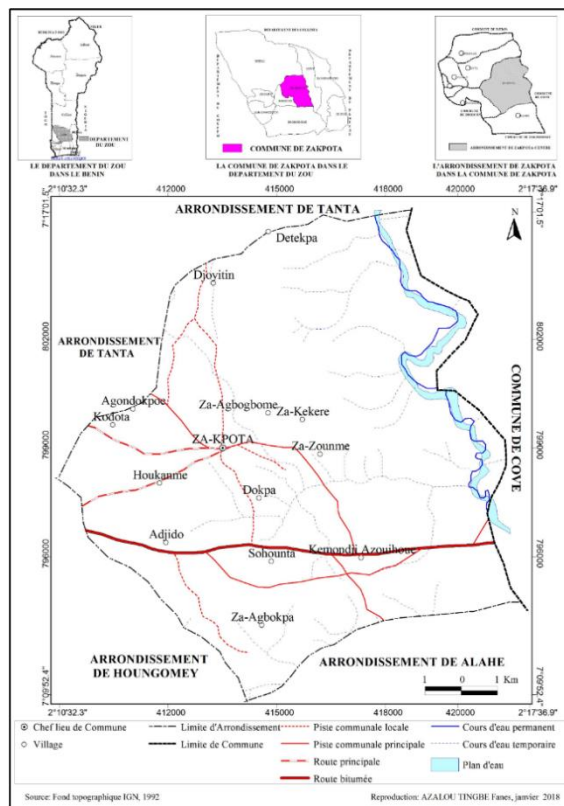
In recent decades, the quality of life has improved with technological and industrial advances. But the destruction of the environment that accompanies these changes has many negative effects on the ecosystems on which human existence depends (O. Ahmed and A. Kamaldine, 2001, p.3). The lack of sanitation, garbage collection and the disposal of wastewater are the biggest environmental challenges facing African cities (Ahomlanto, 2009: 17). These difficulties result in

an accumulation of household waste, the erection of many wild dumps and the stagnation of wastewater and rainwater in many neighborhoods (Odoulami, 2009: 21).

The city of Za-Kpota, in the Department of Zou in the Republic of Benin is distinguished by its insalubrity accentuated. In the absence of basic hygiene and sanitation measures, intermediate dumps strew the streets, the interior of the agglomerations, the backs and frontages of the houses. The foodstuffs located next to these wild dumps are exposed to both flies and insects as well as dust. The rainy season, with the consequent flooding of houses, aggravates the situation by favoring the recrudescence of diseases due to fecal and hydric hazards (FIDESPRA, 2004: 174). In such a context, the need to assess the level of application of health and safety advice for the environment and health is imperative. Adapted to health, Environmental Education (ERE) is a real tool that can help to redefine the values and logic of the population to educate them to true eco-citizenship and reduce risks related to an unhealthy environment (Bourgeois, 2011, p.3). In Za-Kpota, activities related to the promotion of hygiene and sanitation for a change in bad behavior are of less concern to the population and are, moreover, very little developed by the city's development programs and projects. Faced with this situation, several actors are involved in solving the hygiene and insalubrity problems of the city through awareness and awareness. However, efforts to evacuate garbage and wastewater and rain are facing a lot of difficulties, people continue to throw garbage and sewage on the edges of streets, houses, empty plots, etc. The objective of this research is therefore to analyze the effects of ERE on the state of the environment and the health situation of households in the city of Za-Kpota in Benin. In this sense, Environmental Education (ERE) as an education for the responsibilities and sustainable management of natural resources is necessary to awaken the collective consciousness of the people on the unwavering link between a healthy environment and a valid population since it represents a tool for sustainable development inviting adults to become aware of the meaning and impact of their consumption patterns on the biophysical environment as well as on individuals and social groups (C. Villemagne et al. al, 2005, p.10).

1.2. STUDY FRAMEWORK

The city of Za-Kpota is the central district of Za-Kpota Commune. Between $2^{\circ} 15'34''$ and $2^{\circ} 17'33''$ east longitude on the one hand, and $7^{\circ} 12'57''$ and $7^{\circ} 17'17''$ north latitude on the other, the city from Za-Kpota is limited to the north by the district of Za-Tanta, to the south by the district of Allahé, to the east by the commune of Covè, to the west by the district of Houngomè (Figure 1) . It has eight (8) city districts with a high concentration in the south. Map 1 shows the geographical location of the central district of the municipality of Za-Kpota which constitutes the city.



Map 1: Location of the city of Za-Kpota

The city of Za-Kpota has an estimated population of 26,688 according to the fourth General Population and Housing Census 2013, with an average density of 219 inhabitants per km². Climatically, as in the southern zone of Benin, the city of Za-Kpota is located in the sub-equatorial climate domain, with a rainfall characterized by four seasons: a long dry season (December to March); a short dry season (August to September); a small rainy season (from October to November) and finally and a great rainy season (from April to July). The temperature varies between 24 and 34 ° C with average thermal amplitudes which induce an average variation of the temperature in the city. Due to its seasonal variations, the climate has an influence on health with an upsurge of certain pathologies.

2. DATA AND METHODS

The methodological approach adopted for this research is summarized in three points namely the collection and processing of data and the analysis of the results obtained. The target population represents the different groups of strategic actors whose activities or social position are related to the problems of environmental management, that of hygiene and basic sanitation, and health.

These are mainly households in the city, NGO managers, health workers and local elected representatives. The size of the sample is determined according to the Schwartz (1995) method. A total of 319 households were selected, along with two (2) NGO leaders working in the ERA, a health worker and seven (7) local elected representatives. The field data collection work involved seven (7) neighborhoods in the Za-Kpota district. For the collection of empirical data, the methods used are direct observation (with observation grid), individual interview (based on questionnaire and interview guide) and group discussion (Focus Group Discussion) using a maintenance guide. The tools provided information on knowledge and practices of ERE, household practices in household waste management, wastewater and excreta. The data collected were processed using SPSS software, and the results obtained were analyzed, explained, commented on and discussed.

3. RESULTS

3.1. State of hygiene and the environment in the city of Za-Kpota

3.1.1. Household solid waste management

The modes of waste management are the same in the city of Za-Kpota. At the time the ERA improved household knowledge about the danger of long-term storage of waste at home (in used containers such as cans, baskets, bags, etc.), solid waste Households are thrown directly into nature, fields, old abandoned wells or in holes generally located not far from dwellings. Figure 1 illustrates the way in which household waste is managed.

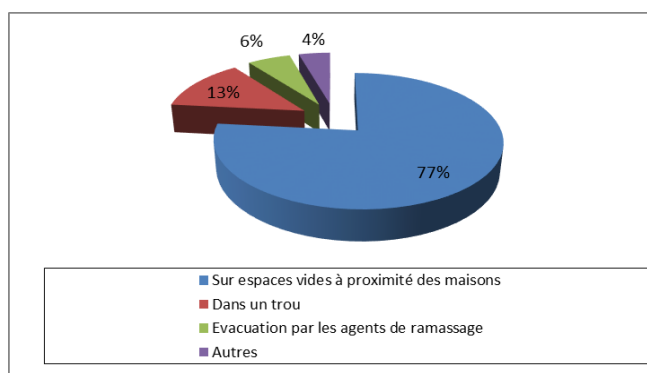


Figure 1: Household waste management method

Source: Survey Results, November 2016.

The analysis of these results points out that 77% of the households questioned throw their garbage into the wild; 13% practice landfilling or incineration (processes that are not highly recommended because of the impact on the atmosphere); 4% use them as compost and only 6%

use the services of collectors. In addition, the means used for garbage collection are inadequate and outdated. It should also be noted that some heavily eroded streets in Za-Kpota Center are backfilled with household waste.

3.1.2. Liquid waste management

Domestic wastewater is that altered by human activities at the household level. They are subdivided into two categories: domestic wastewater (dishwashing water, laundry and bath), sewage water (a mixture of human waste and water). In Za-Kpota, domestic wastewater does not yet have a good management strategy. The populations use endogenous modes of management of these waters.

For rainwater, the water flows by itself and follows its path following the slope towards the low pressure sectors and dragging tons of rubbish in its path. This means that during the rainy season the city suffers the ravages of flooding. In these times, not only is circulation painful but also pathogens proliferate.

3.1.3. Hygiene and sanitation

It is therefore not uncommon to meet traditional dwellings in bar ground very old, semi-modern habitats that are also sometimes outdated. These homes do not often meet the standards of hygiene and ventilation, the presence of dust and mold is common. However, there are modern brick dwellings that are relatively safe and sealed. The culture, the spirit of solidarity and the weakness of the financial resources favor the fact that the populations are piling up in the habitats in two or three rooms and live in not very glowing conditions.

3.2. Environmental Education Practices (ERE) in the City of Za-Kpota

3.2.1. Knowledge and activities of the ERE in the city of Za-Kpota

The analysis of the responses obtained from the households makes it clear that the ERE is not unrecognized by households in Za-Kpota. In fact, 98% of respondents acknowledge that they have, in one way or another, knowledge of the main rules of hygiene conveyed in ERE. As Freire (1982, quoted by J. Daniel, 2010: 41) put it: "No one knows everything and no one knows everything". Based on the components of an educational situation proposed by R. Legendre (2005: 503), we can note that the agent represents the different actors of ERE; the subject is the target audience, namely the population of Za-Kpota, then the object is identified by health. Table I presents the ERE structures of the sector and their various actions.

Table I: Structures involved in ERA in Za-Kpota

Structures	Actions	Cibles	Périodicité	Moyens de communication
Institutions étatiques				
DDEHU	Appui des communes dans les prérogatives environnementales	Mairies-Populations	Continue	Média, animation grand public, panneaux, affiches.
SHAB/ DDS	Amener la population à pratiquer les règles d'hygiène pouvant prévenir les maladies : sensibilisation/Formation sur l'hygiène de base	Enfants-Jeunes-Adultes	Non définie	Animation grand public
Ecoles	Développer chez l'apprenant les aptitudes pour les pratiques d'hygiène en vue d'améliorer l'assainissement de son cadre de vie et sa santé par la sensibilisation	Ecoliers-Parents	Toute l'année scolaire	Fiches pédagogiques, boîtes à images.
Centre Communautaire de Santé	Séances de CCC (ex IEC)	Enfants, Jeunes, Adultes	Hebdomadaire	Relais communautaire, boîtes à image, affiches, sketches
Institutions non étatiques				
ONG	Séances de Communication pour un Changement de Comportement	Enfants, Jeunes, Adultes	Continue	Média, animation grand public, panneaux, affiches.

Source: Survey Results, November 2016.

During the field investigations, it was noted that state institutions such as the Departmental Directorate of Environment, Housing and Urban Planning (DDEHU), the Department of

Hygiene and Basic Sanitation (SHAB)) of the Departmental Directorate of Health (DDS) and women's groups inform, raise awareness, educate and offer solutions to the populations in order to involve them in the process of conservation of environmental health. These structures generally develop ERE actions on hygiene and environmental sanitation through mass media and animations with demonstrations and skits. Despite all apparent efforts, the main target citizens do not yet perceive the actions undertaken and seem to be very little informed. Figure 2 illustrates the population response to ERE actors

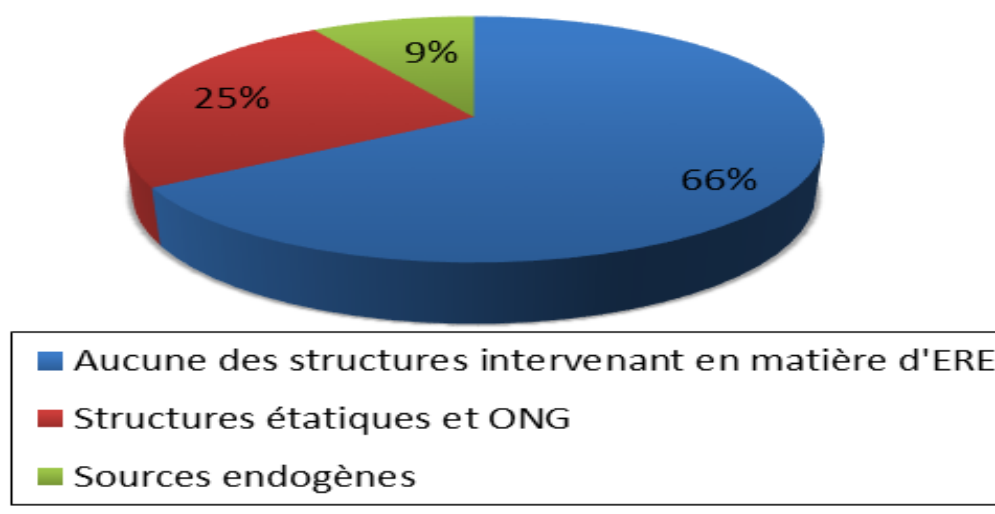


Figure 2: Knowledge of structures involved in ERA

Source: Survey Results, November 2016

From Figure 2 it can be seen that 66% of households are not aware of the structures that intervene in the area of ERE in their neighborhood and only 25% recognize the combined action of state structures and NGOs. For the rest, ERE's knowledge comes from endogenous sources.

3.2.2. Awareness channels and content of ERE sessions

To send their messages to the people, the ERA structures use several means of communication. Figure 3 shows the sources of information of the households surveyed.

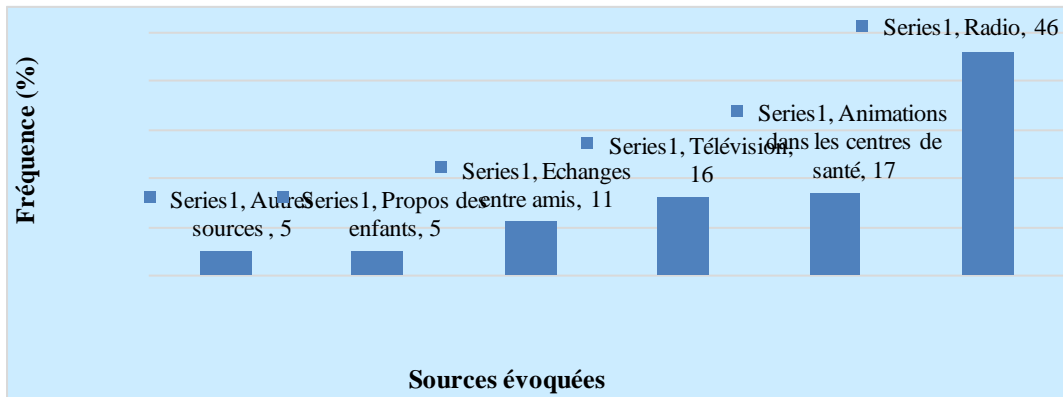


Figure 3: Information Sources for ERA

Source: Survey Results, November 2016.

The analysis in Figure 3 shows that for the respondents, radio (46%), animation at health centers (17%) and television (16%) are the most used sources of information for ERE. On the other hand, the other means of communication: discussion with friends (11%), comments by children (5%) and other sources (5%) are less used. The themes addressed during the ERE sessions range from environmental health, hygiene and disease prevention. The summary of the topics addressed during the ERA sessions is presented in Figure 4.

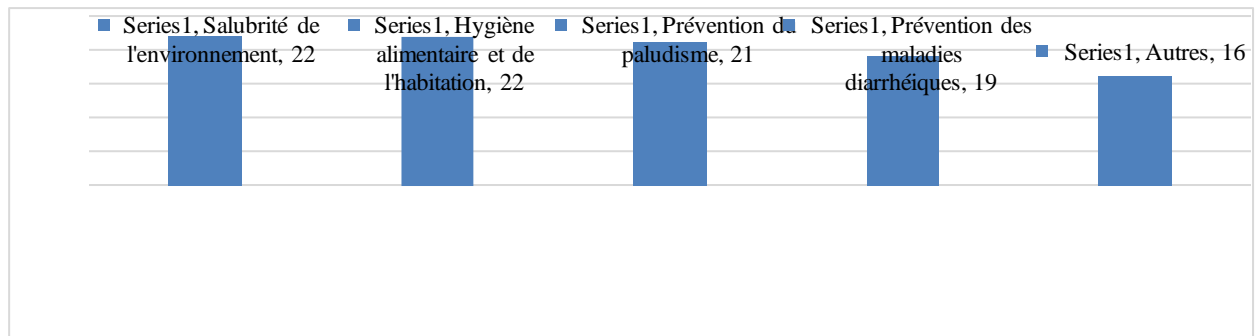


Figure 4: Themes addressed during ERE sessions

Source: Survey Results, November 2016.

Field surveys have also revealed that among schoolchildren, ERE's actions focus on awareness of cleanliness and food hygiene, notions of safety, waterborne diseases, washing hands with water and with soap before and after each meal and especially after any contact with the feces. To this end, the National Institute for Training and Research in Education (INFRE) and the Ministry in charge of Maternal and Primary Education have, with the support of the Beninese Environment Agency, developed and trained teachers to the execution of Environmental Pedagogical Sheets (FPRE) for all classes. ERA focused on children and young people is particularly important because it allows for intervention at a crucial stage in their lives and also because children can have a profound influence on the attitudes and behaviors of their parents compared to the environment.

In the Za-Kpota Communal Health Center (CSC), the emphasis is on the principles of good management not to destroy the living environment, the protection and the sanitation of the environment and hygiene (water, food, shelter, body, etc.), communicable disease control and pollution reduction. During the sessions, picture boxes are used to make messages more easily. For more optimistic results, CSC / Za-kpota frequently organizes home visits for patients. Women's groups, most of which were created in 2000, represent a relatively large movement. Although the main objective is the development of microfinance activities, they occasionally work on raising awareness of environmental sanitation measures, basic hygiene concepts and cleaning days, etc. Their actions are limited to a closed group of people (mostly women) residing in the same neighborhood. The general public entertainment for households occasionally organized by NGOs is based mainly on the benefits of hygiene, the protection of the environment and the use of long-lasting insecticidal nets. In addition, sensitization on noise pollution at the level of religious authorities organized mainly by NGOs PMR and ASPAB. As for the municipality, it does not organize any ERE action. Only a few collective cleaning operations are sometimes initiated on the eve of major events with results often disappointing in the absence of a sustainable system.

3.3. Household Behaviors Facing ERE Themes

3.3.1. Environmental health

Despite the effectiveness of ERE sessions in the city of Za-Kpota, households do not always take into account the recommendations made by the various messages. Figure 5 presents the respondents' behaviors in environmental health.

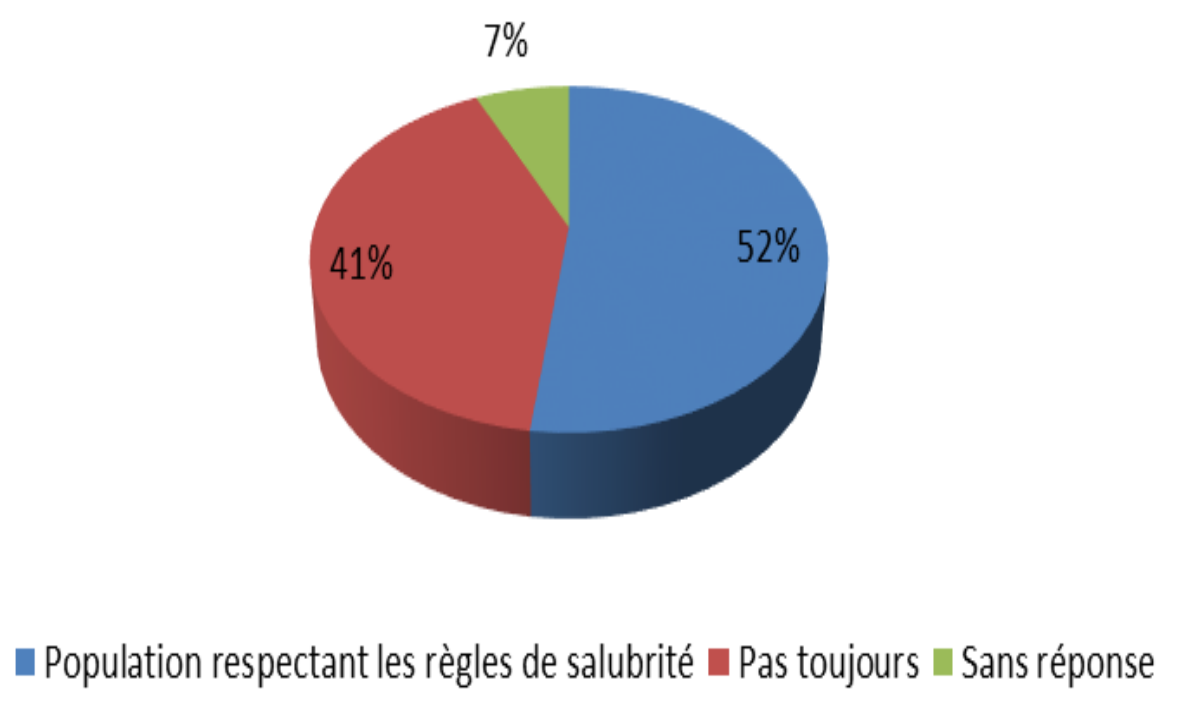


Figure 5: Health Behavior the environment

Source: Survey Results, November 2016.

Figure 5 shows that 41% of households do not often consider environmental recommendations for reasons of incivism and lack of resources. As for households that have remained unanswered on this issue and in their daily lives are not interested at all, they evaluate themselves at 7%. In addition, 52% of households say they respect the rules of health for the benefits of their family. However, people evoke ignorance. In addition to environmental health, basic hygiene is an important parameter in the prevention of disease.

3.3.2. Hygiene of food and housing

In this respect, the situation seems identical. The actions of ERE do not seem to completely reverse the trend of hygienic practices in Za-Kpota. Figure 6 illustrates behaviors in food hygiene and living environment.

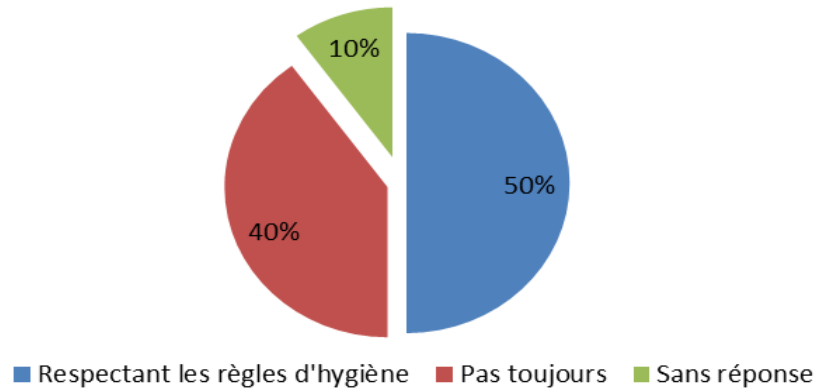


Figure 6: Behavior in food hygiene and housing

Source: Survey Results, November 2016

From the analysis in Figure 6, it appears that the number of households respecting the principles of basic hygiene is 50%. By cons those who by negligence do not always apply 40% and finally 10% remained unanswered.

3.3.3. Prevention of infectious diseases

For the respect of the rules related to the prevention of malaria and diarrheal diseases in Za-Kpota, 62% of the surveyed households affirm to put in practice the recommendations of the ERE to avoid the diseases. On the other hand, 5% and 29% of households respectively say that they do not respect at all and not often these rules for reasons of negligence and lack of means. Figure 7 presents the responses gathered regarding the application of the rules promoted by the ERA.

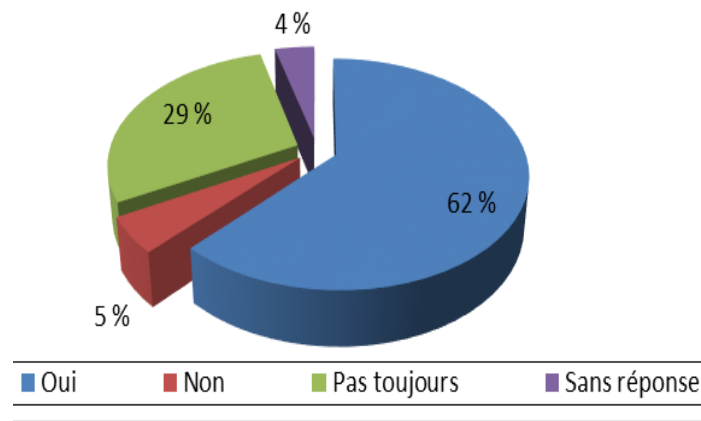


Figure 7: Implementing Rules Promoted by ERA Sessions

Source: Survey Results, November 2016.

Finally, 4% of households, that is to say those who have not been reached by the various ERE messages, remained unanswered regarding the question of compliance with the rules relating to the prevention of malaria and diarrheal diseases.

In theory, households, educated or not, 60%, seem to recognize the merits of the recommendations of ERE, try somehow to apply them and attest that it could prevent or reduce diseases regularly recorded. Nevertheless, 5% of respondents still think that the application causes diseases and 15% remained unanswered. In current practice, the expectation of ERA structures after the various sessions is that people can build bridges with their respective communities and foster continuity. However, for reasons of cultural complexity, people sometimes refrain from giving educational advice even in cases of non-respectful behavior because some people are not at all open to reproach. Figure 8 summarizes the information sharing circles of ERE.

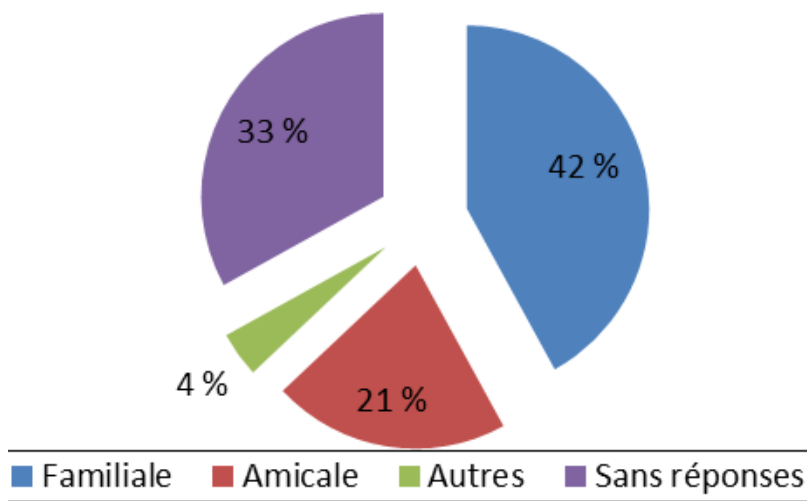


Figure 8: ERE Information Sharing Circle

Source: Survey Results, November 2016.

The analysis in Figure 8 reveals that the preferred sharing circle is the family, that is, children or close household members. Indeed, the interviewees recognize the delicacy of the subjects of hygiene and sanitation. In Za-Kpota, no one admits to bad hygiene behavior. So for fear of being humiliated, respondents prefer to remain insensitive to the bad behavior of their neighbors. This situation often blocks the retransmission of ERE information.

4. DISCUSSION

Research with field actors reveals that the majority of respondents recognize the effect of unsanitary and unhygienic conditions on the state of their health. These results are consistent with the findings of A. Haman (2000: 42) who emphasized that the relationship between the state of the environment and sanitation are important factors influencing human health. Za-Kpota are mostly acquired through ERE sessions. Despite this, hygiene and health preservation behaviors need to be improved. V. Ahissin (2005, p.51) echoed this point by analyzing the links between the immediate environment of Savalou populations and diseases such as malaria, diarrheal diseases, gastrointestinal diseases, skin diseases and skin diseases. bilharzia. He found that the determinants of illness lie in certain natural conditions and poor practices in hygiene and sanitation. In addition, the results showed that actions related to the promotion of hygiene and sanitation for a change in bad behavior are less of a concern for these same populations and, moreover, are very little developed by the various projects and development programs. . These conclusions are consistent with the results obtained by J. Sama (2006, p.96) in rural Atacora, Benin.

In the absence of monitoring and sustainability, attitudes towards the environment do not change radically in Za-Kpota as expected. Despite educational efforts to keep the environment healthy, the effects of the ERA have not reduced the negative environmental behavior of the population or the cases of diseases in the city of Za-Kpota. The populations concerned by these actions do not yet seem to define their role as subjects in the educational chain. This finding is consistent with the one reported by E. Gozo (2013), who ended up emphasizing the importance of ERA at the local level to meet the challenge of preserving the environment for future generations. It is clear, therefore, that ERE's actions have not really had an impact on the environment and health. A. Lazarus (2001, cited by E. Van Steenberghe and D. Doumont, 2005, p.24) had reached the same conclusions and, in his opinion, the Community initiative and the direct and active participation of the public remain to be developed.

Monitoring is therefore of great interest for the sustainability of efforts over time, which is not the case in Za-Kpota. This is also emphasized by J. Daniel (2010: 85) by demonstrating that putting the target audience into action often guarantees the integration of learning into daily practice. The home visiting techniques developed by the community relays of the Za-Kpota CSC are therefore examples to be encouraged. E. Ngnikamet al. (2007, p.7) have achieved a very positive result with the measurable improvement of hygiene practices following a health monitoring study of 400 children under 5 years old in an urban ecosystem of Yaoundé, a very positive result. been obtained. It will be necessary to privilege, not the conscientization nor the sensitization of the populations, but the education in order to bring a long-term solution facing the problems of health in relation to the environment.

CONCLUSION

This research focused on Environmental Education and Health in the city of Za-Kpota has found that the problems of unsanitary due to poor waste management and lack of sanitation are acute. This situation favors the degradation of the environmental components (air, water and soil) and

subjects populations to the gravity of infectious and parasitic diseases. Faced with this situation, health-promoting ERE actions have been initiated by institutional bodies and NGOs.

These actions help to disseminate within the different target groups of the population (women, pupils, women's associations, civil and religious authorities, etc.) information and awareness messages in the field of environmental protection, hygiene and hygiene. the fight against communicable diseases and the reduction of various types of pollution. The different actors individually and collectively carry out commendable activities. But these actions do not yet cover the ever-increasing needs for sanitation and health. This research shows that in order to change behaviors, it is necessary to go further than simply raising awareness and acquiring environmental knowledge, ie developing a synergistic ERE strategy aimed at developing knowledge. , local know-how and transforming citizens' values with tools and flexible and effective communication mechanisms to enable competent environmental action and reduce health risks related to environmental problems.

REFERENCES

1. Ahissin V., 2005, Environment and health problem in the commune of Savalou, Master's thesis in Geography, UAC / FLASH / DGAT, Abomey-Calavi (Benin).
2. Ahmed O. and Kamaldine A., 2001, Report on the Comoros Local Healthy Environment Education Initiative, Moroni.
3. Ahomlanto C., 2009, Beninese sanitary police in the fight against pollutions and nuisances in urban areas: case of the city of Cotonou. Brief of DEA, DGAT / FLASH / UAC, Abomey-Calavi.
4. Bourgeois K., 2011, Environmental Education Strategy to preserve the health of Lake Paquet, Environmental Master's Thesis, Université de Sherbrooke, Montreal, Quebec.
5. Daniel J., 2010, Review and Critical Analysis of Agricultural Environmental Education Programs to Change Operator Practices, Environmental Master's Essay (M. Env.), University of Sherbrooke, Quebec.
6. FIDESPRA, 2004, Za-Kpota Communal Development Plan (PDC). Main Strategic Vision Report and Multi-Year Investment Program, Za-Kpota (Benin).
7. Gozo E., 2013, Environmental Education and Household Sanitation in the 1st, 5th and 9th District of Cotonou, Master's Degree in Geography, DGAT / FLASH / UAC, Abomey-Calavi.

8. Haman A., 2000, Household Garbage Management in the City of Garoua in Cameroon, DEA Brief, FLASH, UAC, Abomey-Calavi, 71 p.
9. Legendre, R. (2005). Current dictionary of education. 3rd edition, Montreal, Guerin, 1554 p.
10. Ngnikam E., Mougoue B., Tietche F., 2007, Water, Sanitation and Impact on Health: Case Study of an Urban Ecosystem in Yaoundé. Acts of JSIRAUF, Hanoi, 6-9 November 2007.
11. Odoulami, L., 2009, The issue of drinking water and human health in the city of Cotonou (Republic of Benin), PhD thesis, University of Abomey-Calavi.
12. Sama J., 2006, The problem of hygiene and sanitation in the drinking water consumption in rural areas in the Atacora Department. Brief of DEA, EDP / FLASH / UAC, Abomey-Calavi.
13. Villemagne C., Brunelle R. and Sauvé L., 2005, Environmental Education for Adults. Internal document. Canada Research Chair in Environmental Education, Montreal, Quebec.
14. Von Steenberghe E. and Doumont D., 2005, Environmental Health Education in Community Settings. A New Field In Emergence ?, University of Quebec, Montreal.