

Social representations of the relationships between plant vases and the dengue vector

Fernando Lefèvre^a, Ana Maria Cavalcanti Lefèvre^b, Sirle Abdo Salloum Scandar^c and Sueli Yassumaro^c

^aFaculdade de Saúde Pública. Universidade de São Paulo. São Paulo, SP, Brasil. ^bSecretaria Municipal da Saúde de São Paulo. São Paulo, SP, Brasil. ^cSecretaria de Estado da Saúde de São Paulo. Superintendência do Controle de Endemias. São Paulo, SP, Brasil

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Abstract

Objective

To investigate how houseplant 'caretakers' represent the relationship between plant vases and breeding sites for the dengue vector, in order to reformulate educational policies.

Methods

The present study was carried out among caretakers from three São Paulo State municipalities in which dengue is known to exist and in which extensive educational activities had been previously conducted. Twenty households from each of the municipalities studied were selected based on larval density evaluation bulletins elaborated by SUCEN (Endemic Disease Control Coordination) and classified as positive or negative for the presence of *Aedes aegypti* larvae in plant vases. The 60 participants were aged 20-65 years and were directly involved in plant care. Interviews were carried out using a semi-structured questionnaire, and recorded in cassette tapes. Data were tabulated using the collective subject discourse technique.

Results

Negative representations found included: erroneous information in the population's imaginary universe; disbelief that a 'tiny little mosquito' could cause such extensive problems; belief in the disease only after its concrete manifestation; and mistrust in educational activities in general. Positive representations included: understanding of the basic mechanism of dengue transmission; appreciation of the role and constant presence of sanitary authorities; understanding of their own share of responsibility in fighting the disease.

Conclusions

With respect to vector control activities, the exceedingly synthetic messages emitted by the sanitary authorities prevent the information from being assimilated by the population to the desirable extent. Educational activities must be understood by the population to which they are destined if any behavioral changes are to take place.

INTRODUCTION

A rapid expansion of the *Aedes aegypti* vector, especially in the North and Northeast regions of the state of São Paulo, southeastern Brazil, has been taking place since 1985. The first outbreak of the disease took place in 1987, when a small number of cases were observed in the municipality of Araçatuba.

In late 1990/early 1991, a dengue epidemic was registered in Ribeirão Preto, which expanded into neighboring municipalities, totaling over six thousand cases of dengue confirmed by laboratory testing.³

In the following years, transmission spread to other regions of São Paulo State, but with a further drawback: in addition to the circulation of dengue sero-

Correspondence to:

Fernando Lefèvre
Faculdade de Saúde Pública da USP
Av. Dr. Arnaldo, 715
01246-904 São Paulo, SP, Brasil
E-mail: flefevre@usp.br

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type 1, serotype 2 was also isolated.³

Vector biology and studies of its behavior indicate that immature forms of *A.aegypti* can inhabit a wide range of vessels, providing they contain a minimum amount of water. This water may be supplied either by rain or, especially, by the actions of humans in their environment. Thus, the maintenance and spread of *A.aegypti* in the environment is closely related to human living habits.

Contemporary Brazilian society has been under the influence of accelerated urbanization, pollution, environmental degradation, and deficiencies in urban infrastructure, sanitation, and education, promoted by an economic model that prevents access to a better quality of life for most citizens. When combined with the dengue issue, this can generate undesirable consequences for modern urban life. Therefore, society as a whole – and not only the public sphere – must engage in dengue control. In public health, little, if anything, can be done without the participation of society.⁵ By participation we mean not only the incorporation of the dengue prevention program by society in general, but also by the different sectors of society responsible for the production and commercialization of products that may become breeding sites for the mosquito.

In this context, the goals established for the educational component of dengue vector control programs in the state of São Paulo reinforce this idea; however, the actions taken show greater focus on chemically combating the vector, perhaps due to greater reliance on its efficacy for environmental management.

The educational actions initially implemented had a more immediate character. These actions attempted to encourage the population to adopt the instructions given as a model for a change of behavior. The educational component of the dengue control program hinted towards greater effectiveness when program municipalization advanced in mid 1997, assuming an execution which was closer to local realities.

The messages produced, however, maintained the same focus as before. Only slight nuances suggested a greater participation of the community in policy making, favoring local reality, and with systematically higher frequency. Despite these efforts, the educational component had little effect on the outcomes of entomological surveys. Furthermore, when analyzed from the execution standpoint, educational actions – still based on cleaning campaigns, distribution of printed material, and broadcasting of information about the vector – were not sufficient to promote

changes in behavior, nor were they able to generate genuine community participation.⁹

One of the hypotheses raised in the present study is that the educational campaigns and the messages they conveyed, based – even though not always consciously – on the traditional approach, conventionally termed ‘transmission pedagogy’, did not allow, precisely because of the pedagogical option adopted, for the establishment of an effective code-sharing dialogue relationship between sanitary and common-sense reasoning, a necessary condition for the educational action to have an impact on behavioral change. In this context, educational messages tend to convey abstract meanings, not significantly in touch with the receptors’ everyday life. Hence, it becomes difficult for receptors to incorporate the meanings intended by sanitary authorities.

Thus, as an attempt to better understand the impact of such messages and their incorporation (or lack of such) by the population in the past few years, we undertook the development of a qualitative research project⁴ aimed at assessing the level of understanding of dengue among affected populations.

Emphasis was placed on plant vases because vector biology studies, and the results of larval density evaluations indicate that *A.aegypti* is frequently found in artificial vessels kept full with water by the population. These are classified as either serviceable or unserviceable (tires, plant vases, cans, animal drinkers, water tanks, etc.).² In the selected areas – which share certain socioeconomic and demographical characteristics –, entomological indicators point towards a high incidence of *A.aegypti* in these vessels. The ‘plant vase’ category included all possible types of plant maintenance, such as: aquatic plants or plants cultivated in water, ornamental vases, *xaxim* (fern-trunk vase) plates, vase drippers, etc.

METHODS

This study portrays the level of understanding by affected populations of the relationship between dengue and plant vases through their Social Representations. Three upstate São Paulo municipalities were selected, namely Votuporanga, in the northeastern region, Salto in the Southeast of the state and Bebedouro in the West Central Area. In some, the infestation by *A.aegypti* was an older phenomenon whereas in others it was more recent.

Twenty households from each of the three study municipalities were selected. Households were classified as positive or non-positive for a *A.aegypti* Lar-

vae in plant vases. The addresses of these households were removed from the evaluation bulletins used by Sucen (*Superintendência de Controle de Endemias* – Endemic Disease Control Coordination) for vector infestation measurement.

The 60 subjects (20 from each municipality) included in the survey were aged 20-65 years, predominantly female, and were directly involved in plant care. Since this is an exploratory study, the number of subjects was arbitrarily determined. This determination was based on the saturation of the representations present in the reports collected.

Interviews were conducted between 1 and 15 September 2000, by means of semi-structured interviews comprising seven questions related to our project. Questions were pre-tested and amended where necessary. The interview took place at the subject's home. With the subject's consent, interviews were recorded in cassette tapes and subsequently transcribed.

Interview data tabulation was carried out using the collective subject discourse technique,⁷ a set of procedures for the tabulation and organization of discourse data of verbal nature.

This technique consists of selecting, from each individual answer given to a question, *key expressions* representing the most significant sections of the answer provided. To the key expressions correspond *central ideas*, which are the synthesis of the discursive content manifested in them. With the material provided by key expressions of similar central ideas, synthetic discourses, based on a variable number of participants, are constructed in first person singular. This is designated the *collective subject discourse* (CSD), in which the ideas of a group or collectivity are represented as an individual discourse.

The CSD is a methodological tool designed to render social representations more clear and expressive, allowing a given social group to be seen as the author and emitter of discourses shared among group members.⁶ With the collective subject technique, we attempt to reconstruct as many synthetic discourses as deemed necessary for expressing a given idea or a social representation of a phenomenon.

We chose to tabulate the data collected in the three cities as a single group, since no differences were detected in terms of the social representation of the studied subject between the different cities.

With respect to presentation, we chose to present

the *results* and the *discussion* separately, since the CSD technique is based, among other things, on the opposition between the *discourse of reality* and the *discourse about reality*;⁸ thus, in the Results section, the author seeks to recover the *discourse of reality*, whereas the Discussion section is reserved for the author's meta-linguistic *discourse about reality*.

RESULTS

Subjects' answers were recorded, transcribed, and analyzed. *Central ideas* and CSDs were obtained. The five questions considered as most important will be analyzed.

Question 1 – “Tell me a little about dengue. What do you know about it?”

Central Idea I – *Dengue is a disease transmitted by a mosquito*

Collective subject discourse I: *What I know about dengue is that dengue is a mosquito that bites and transmits disease. It is a disease contracted or caused by the Aedes aegypti mosquito. So, it's the transmission of the mosquito, that mosquito, I don't know how to explain the disease clearly, but I know that it's through this mosquito that the disease is transmitted.*

Central Idea II – *Dengue is a sad and serious disease, that can be fatal*

Collective subject discourse II: *It's a sad disease. Everybody I know who has had it says it's difficult and fatal because it can kill: it's serious business. I don't know much, I know that it's a disease that, I don't know, can kill you; it's a mosquito, which transmits very serious diseases. Dangerous.*

Central Idea III – *I get confused: it's a disease transmitted by an insect, very dangerous, and that can give you yellow fever*

Collective subject discourse III: *It's a disease transmitted by a little mosquito, and it can kill you; there is one that kills, and I don't know the other one, there are two types. It's not dengue, it's yellow fever. ...I mix it all up, I think that it's an insect that transmits a very dangerous disease, yellow fever, the mosquito disease, Aedes aegypti, and that it likes clean, still water, that's how it spreads, I don't know the word, then it bites you, gives you yellow fever. It's a kind of yellow fever that comes from vases with still water.*

Central Idea IV – *Dengue is a disease that gives*

you headache, fever, vomiting, diarrhea. It's transmitted by the Aedes aegypti mosquito, that you can find in clean, still water. That's why we have to get rid of breeding places

Collective subject discourse IV: *That's the little I know about dengue, that it's a disease transmitted by a mosquito, when you leave water in a vase. It's a contagious disease, transmitted by a vector that proliferates more in clean, still water and in running water, or in those vases, the xaxim plate; it can stay for almost a year, alive, around the plate, where there's no water. Then it can fall into that water and proliferate and transmit the disease. It's a horrible disease, that gives you body pain, fever, dizziness, makes you feel bad, and vomit, and causes spots on your skin. That's why you have to take care of everything, keep the backyard clean, you can't leave water in drums, open water tanks, and tires, or else the mosquito will come out from that water, then it can go and bite a child, an adult, or an older person, and it makes the children sick. There's also hemorrhagic dengue, that can be fatal, I don't know if getting care in time will help, but I don't think so. The ladies came here, looked at the flower vases, and then, since it had rained, and water got into the vase, then they found a little mosquito there. Then the guys from surveillance came and told us it was really a dengue breeding site. But, on the same day as the lady came, I threw it out right in front of her, with the flowers and all, and all the vases I have now don't have the little plate with water underneath them, and if they do, you have to put sand in it. They always come by with an explanatory flier, they ask if they can come in, and we let them in.*

Central Idea V – Dengue is a disease transmitted by a contaminated mosquito that bites people and contaminates them. Pots that gather water can breed the mosquito. That's why you mustn't leave still water around

Collective subject discourse V: *Oh, as far as I know, it's a mosquito called Aedes aegyptius or aegypti, I'm not sure, and that if it bites you and if it's contaminated, then it can transmit the disease; I mean, if it breeds in the water, like in those little pots, tires, and bottles that gather water, the mosquito that transmits dengue can come and cause dengue. That's why we have to be careful, put thick sand, not leave that still water there. If someone's bitten by the mosquito, he'll be contaminated, have a lot of fever, body pains, headache, and it can even lead to death. So that's it: what I know is that dengue is a contaminated mosquito that bites someone and that person gets contaminated. It's a virus, transmitted by a mos-*

quito that causes this problem, that brings serious problems to your health, and that it proliferates in water inside abandoned things; that's more or less what I don't want in my backyard.

Question 2 – “In the educational campaigns, they say that you shouldn't leave water in plant vases. Do you know why?”

Central idea I – Because still water gets dirty, and then the mosquitoes breed

Collective subject discourse I: *Because of the mosquito, because when there's still water, it gets dirty and that's where the mosquito deposits are.*

Central idea II – Because the dengue mosquitoes deposit their larvae in water

Collective subject discourse II: *Because the mosquito comes and puts his little larvae there and starts reproducing. The dengue bug is a mosquito and it lays larvae in the water and that's where the mosquito that transmits dengue comes from. The plant vase is a mosquito breeding place, water gathers in there and the mosquitoes proliferate; they lay their larvae, and then mosquito breeding proliferates.*

Central idea III – In order not to breed the mosquito, it's necessary to change the water and to put medicine in it all the time

Collective subject discourse III: *It's in clean water, as the say, I think that in dirty water the dengue mosquitoes can't breed. That's where a lot of dengue sites appear, that's because the folks slack off, so then, if you have it, you have to change it (the water) all the time, and put medicine in it, so that it doesn't harm our own health and so that the mosquito can't breed in that water, or else the mosquito will breed.*

Central idea IV – Because it's in still water that the mosquitoes lay their eggs, that's where they grow, proliferate, increase, and give origin to the dengue mosquito

Collective subject discourse IV: *It's in still water that they breed, those little dengue bugs, the mosquito. Because it goes there to lay eggs in the water, and it procreates, so we can't leave still water around, so that the dengue larvae don't breed. This mosquito, it multiplies in water, it's in water that they transform themselves. They come, lay their eggs, and then they progress, right, procreate. In clean water, the mosquitoes love it, it's eggs are latent, until it rains, or until it gives rise to new mosquitoes. The mosquito*

stops there, and then leaves its egg, it can come out of there... the larvae are born, and then the dengue mosquito can come out of there.

The Aedes stays there, still, alive, close to the edges, then, the day when it happens that the water covers the plate and spills over, then it can breed in the clean water, proliferate, and contaminate, and then it'll transmit the disease, and it will be really bad for a lot of people, with this lack of care. The mosquito larvae grow in plant vases. That's where the mosquito lays its eggs, especially in vases, because it's always in the vases that there's water the way they like it, it's its main environment for reproduction, in that still water, because the water that gathers in the vases breeds the mosquito. We can see it when we empty the cans.

I learned that I can never leave still water lying around, and I taught my kids too, especially the girl, she waters the plants and says: "look, mom, you can't leave water there", right, that, I've learnt well. So you can't leave still water around, you have always to put some earth in it, if you leave still water, then they come, and lay their eggs, right?

Question 3 – "How do you catch dengue?"

Central idea I – Trough the mosquito bite

Collective subject discourse I: *By being bitten by the dengue mosquito, Aedes aegypti. If the mosquito bites people, then they'll catch dengue, and get very sick. It's not transmissible, is it? You have to be bitten by the mosquito, right? So it's through the mosquito: it bites and the person gets sick.*

Central idea II – The mosquito bites a sick person and then bites a healthy person and he catches dengue

Collective subject discourse II: *It's because the bugs bite people with dengue, then they come and bite us. So that's what I know. It bites people and the person gets sick, with fever, a lot of symptoms that the doctors say are like the flu, a strong flu. So a lot of people confuse the two. That's why when these symptoms appear you have to check soon if it's dengue or not, because you can mistake it for a strong flu.*

Central idea III – If the mosquito is contaminated it will transmit the disease

Collective subject discourse III: *Through the bite of a contaminated mosquito. When the person is bitten, right away she's contaminated. I think that if the*

person is bitten by it (the mosquito), then it's contaminated, if the mosquito is contaminated, it bites, and then it transmits the disease.

Central idea IV – Dengue may be transmitted by people who have traveled and caught the disease somewhere else

Collective subject discourse IV: *When people travel, right, they also catch dengue and transmit it to us.*

Central idea V – People catch dengue because they keep breeding sites

Collective subject discourse V: *Because of people's carelessness, they don't take care of their backyards properly, they leave old tires lying around, jars open facing upwards, right, they leave trash around, pots filled with water in their backyards. If you're not careful with these pots, tires, or anything with water inside, then you can catch it.*

Question 4 – "There are many campaigns around town, with posters and educational activities about dengue, but it seems that people's behavior hasn't changed much. For example, people continue to leave water in their plant vases. Why do you think this happens?"

Central idea I – Lack of consciousness from people

Collective subject discourse I: *Because the people are not conscious yet that dirt, and still water, that's where the bugs procreate, and that's where the mosquitoes multiply; a lot of people are still not educated for that, I guess; they are not conscious that this is a fact; in my opinion, they haven't seen the what dengue can do: I think that if the person had consciousness she wouldn't leave (water in plant vases), which can cause a disease through the bugs, right, Aedes aegypti.*

If people became conscious that if they keep on leaving water around it will never end, the mosquito will always have a place to lay its eggs and we'll never be free of dengue. Yes..., people aren't conscious yet that they have to get rid of this disease and avoid this, to eradicate it once and for all.

Central idea II – Because they think it's not going to happen to them

Collective subject discourse II: *Because people are not conscious yet of the danger that can happen, because sometimes it happens to their neighbor*

but they think that it can never happen to them; So when it happens to them, to their family, then they get more conscious of the problem. I think people have a certain, how can I put it, resistance, right, to adhere to the campaigns. I think it's a matter of culture, I think it's just like St. Thomas, "you have to see it to believe it", unless they see something from close up they won't believe in it. I think it's because nothing has happened yet, and they haven't seen anyone, like, sick with dengue, so I believe that they are helpless; people are very irreducible, if they don't believe it, they won't believe it, period; "imagine if that's going to happen to me?" And they really can be affected.

That's what I tell you: people think it'll never happen to them, or to someone in their family, they'll only become conscious when someone in their family catches it, or a neighbor, or someone close, then they'll really see that it's a disease that has to be combated, and combat the mosquito disease.

We, Brazilians, only become conscious of things when they happens to us. So that's why we keep doing it, thinking that it'll never happen. So that's it, that's our mistake. We never believe that something can happen to us. If it happens to us, then we'll become conscious, and be more careful with the still water, right, emptying it and cleaning it.

People always think that nothing happens in our home, they think that it only happens in other people's homes; when it happens in our home, then we believe it, right?

Central idea III – Lack of responsibility, collaboration

Collective subject discourse III: I think that it's like that, and it's also the lack of responsibility, too. I think that, just like in my case, every dengue leaflet I put my hands on, every important paper, I read. I think that a lot of people simply take the papers, have a look, crumple them up and throw them in the trash. Because that's what I used to do. Not now: they come from school, the leaflets we get; I stop, read them, and try to do as they say, right. I think that that's it, and people don't do this. Like me, no one used to do it. Today I pay more attention.

I think that there are some people that are irresponsible with society, right? Because it's on TV, on the radio, all cities have these campaigns, but the people don't have it, I don't think they have much collaboration. I believe that it's irresponsibility, that's what it is.

Central idea IV – They don't believe it

Collective subject discourse IV: People aren't sure if that's really it, so they don't care, they think it's all nonsense, because they don't believe that a tiny mosquito like that can cause such a serious problem to the population.

I think that they don't really believe that diseases can be caused by the fact that that still water is lying there, so the person doesn't... how do you say it, she doesn't really care for things, right, about leaving everything clean, making everything tidy.

Folks leave water around because they don't take it to seriously, right, I think that it's a little bit of lack of education, right? As you said, there're a lot of campaigns, but there're still a lot of people that don't care about that, people don't believe it, or care, they even make fun of the campaigns. It's either lack of interest or they don't see the people who are already contaminated with dengue, or often they don't give credit to the campaigns that are made.

The folks don't take it seriously, right, because they don't have the disease. I think that they don't really believe in what can happen.

So, if the other people leave water around, I really don't know. Because me, in my case, I don't leave water around, now, the minds of other people, it's hard to know, right, and it still hasn't entered their heads that it's serious business, so they take it to the other side, they don't think it's serious business, but it is.

Central idea V – Laying their responsibility on others

Collective subject discourse V: Look, in general people are listless, since there's, say, there's SUCEN, that does a huge part of that work, or the municipal government, or backyard cleaning campaigns, then the person, or the owner of the yard, right, or the person who lives in the house, they end up leaving things they should be doing to a third party.

Central idea VI – Carelessness

Collective subject discourse VI: It's lack of care, a little bit of carelessness, even. Here in my house, too, there was some carelessness because, before this lady came, there were many others, so we should have already been real conscious; so it was carelessness, a little carelessness also, people slack off a bit, right: if you know it's bad, then you should avoid it; but a lot of people can't bother...

Central idea VII – *Lack of understanding, information*

Collective subject discourse VII: *Because the people don't understand, they don't have it in their heads what we've got to do, because, sometimes, sometimes people don't know things properly. There's not enough explaining, there's no one to go there and warn them. People have no idea about the disease, what it is, right, they're still not aware of the problem. It's lack of understanding, really.*

Question 5 – “Now I will read a sentence and I want you to tell me whether you agree or disagree with it, and why. The sentence is: ‘Fighting dengue is something for the government and for doctors. The population has nothing to do with it’”

Central idea I – *The government has been working hard enough; controlling role*

Collective subject discourse I: *I don't think that the government is right in everything, or that they can manage by themselves, but they've been working hard towards that, lots of ads, lots of campaigns, and the folks from SUCEN have been working a lot, visiting a lot of homes, I've seen it. In my own house even, people come here, that's really important, and I like it that people come see if everything is tidy, that's where we have to start from.*

Central idea II – *It starts from above, but the population has to collaborate*

Collective subject discourse II: *It starts from above, it's a work that starts from above, from the Federal or state or municipal government, from doctors, health centers, but the population has to contribute their part, too, mainly taking care of all the stuff in their own backyards.*

Central idea III – *The population is the main interested party; the responsibility for fighting the mosquito is mostly ours*

Collective subject discourse III: *I think that the population is mostly responsible, right? The government comes in with the funds, but I think that the population is mostly responsible.*

The population has everything to do with this. Its the population that has to be careful. The government, I believe, they can't deal with every single house. I think that if the population doesn't help, they can't come into every single backyard to check whether there's dengue or not: what good are all

those campaigns that doctors and the government make if I don't clean my backyard, and my neighbor doesn't clean hers, if I leave still water around, and so does everyone else? I think that they have to help, but the people have to take care of themselves. The population has got to realize that if they were careful all this wouldn't be happening. When all the population starts to help with the campaign, that's when all this will end, or else, the government is doing all it can. I think that most of the responsibility is ours; if the population doesn't help, there's no use in the government motivating and having campaigns. The population really has to contribute a lot towards eradicating the mosquito, the government alone will go nowhere.

So I think that it depends much more on the population becoming conscious, right? It's the population that has to be more conscious, the government is doing their part, a good part, now we have to be conscious, and help; there are a lot of houses, that requires a lot of people, if the folks aren't conscious, then there's no way.

Central idea IV – *Shared responsibilities*

Collective subject discourse IV: *We all have to do our own part, you do yours, I do mine; the government sends people to your home, they see what's wrong, and you've got to obey, and do what's right, it's not the government alone, no, it's the government and the population. Doctors and the government are there to warn us, to help, the doctors help us so that the disease won't cause deaths, and the government is there to warn us. Only that we have to be conscious and try to help ourselves, right, not leaving things around that'll let the mosquito bite us. The entire population has to do with this, because everyone has to be careful, right? The doctors aren't going to come to your house and clean the water that's lying around there, or the trash, they're not going to come take it away, no way. That's for us to do. Everyone has to become conscious of that. I think that everyone is involved in this, right: it's only if everyone works together that we can completely combat dengue, because all the people aren't together in this, there's no way we can combat it, if one person wants to combat it but the other one doesn't, then it's useless. Having campaigns, having this, or that, everyone has to have a purpose; not only the government is to blame. I think that it's right that the government has to help, putting insecticide in all the vacant lots; they even have to force some industries to clean up, take away their trash, the factories, but I think that if the people aren't united it's impossible, not even if they come*

every single day. I think that it should be 50% government and 50% the people, or else it won't do, it won't solve the problem. Each of us has to do our own part, or else there's no way.

DISCUSSION

Two conditions are necessary (albeit perhaps not sufficient) for preventive behavior to take place and maintain itself when dealing with such a complex disease as dengue: that messages be formulated by the competent authorities and decoded by individuals in the population as correctly as possible, and that the messages decoded by these individuals make full sense to them.¹

Messages appropriately formulated by sanitary authorities will obviously have a greater probability of being adequately decoded by the individuals; messages adequately decoded by the individuals have greater chance of making sense to them; and correct messages that are correctly understood and meaningful to these individuals will have a much greater chance of being transformed into preventive behaviors.

Based on these assumptions, the present research allows us to raise a few interpretive hypotheses concerning the Social Representations found:

Exceedingly synthetic educational messages emitted by sanitary authorities

A number of collective subject discourses clearly show that a very schematic idea has entered people's imaginary universe, one which centralizes the dengue issue on – and almost entirely reduces it to – combating the *dengue mosquito*.

The unquestionable need to eliminate the vector, presented perhaps in a somewhat exaggerated fashion in the educational messages, has produced, among other things, an undesirable effect: it has led the population to confuse dengue and its vector, or, when defining dengue, to mistake a part for the whole.

Such confusion does not favor the adoption of preventive behaviors, since it renders the relationship between 'water' and 'mosquito' obscure or even incomprehensible, and, consequently, all the 'larval' logistics of fighting the disease as well. Furthermore, it favors, among the population, an equivocal understanding of the disease, in that it reduces it to an erroneous and partial cause-effect relationship ("the person becomes sick because of the bite of the dengue mosquito").

Presence of erroneous information in the imaginary universe

Some discourses point towards the presence of erroneous information among the population, including a confusion of dengue and yellow fever, which, of course, is partly due to the common vector. Likewise, one notices the presence of other erroneous ideas, such as that the mosquito deposits its larvae directly into the water, a mistake which may be due to the larvae, unlike the eggs, being visible to the naked eye.

Understanding of the basic mechanism of disease transmission

On the other hand, other CSDs show that ideas that are basically correct, concerning breeding sites and modes of transmission, are also included in the people's imaginary universe, showing that the population is capable of understanding a relatively complex disease, such as dengue.

Awareness of the population's role in combating the disease

Likewise, our data reveals the population's ability to discriminate between their own responsibilities and those of other parties (government and healthcare professionals) in controlling the disease through the eradication of the vector.

Mistrust in educational activities in general

Other discourses point towards an important challenge to be faced: a certain amount of saturation concerning educational campaigns in general, and those related to health especially, which is undoubtedly part of a much wider-ranging phenomenon, rooted on a contemporary society and culture overloaded with all kinds of information, which greatly hamper the population's receptivity and willingness towards educational messages, thereby undermining the efficiency and efficacy of educational activities.

"They'll only believe in the disease when it happens to them"

The war against dengue and the strategy adopted for vector eradication require educational activities calling for an eminently preventive behavior, the achievement of which is a formidable task for a population exceedingly accustomed – concerning disease-related events – to a reactive behavior, in which measures are only taken after the fact is installed. Indeed, the presence of ideas such as: "people will only believe in the disease when it happens to them" indi-

cates that part of the population still does not feel sufficiently at risk of contracting the disease.

Disbelief that a 'tiny little mosquito' can cause such extensive problems

Here again we can notice the presence in the social imaginary universe of ideas that reveal certain difficulties in correctly situating the mosquito within the complex process that is dengue, which indicates that educational information is still insufficient for a thorough understanding of the disease by the population as a whole, a condition necessary for the installation and maintenance of preventive behaviors.

Appreciation of the role and constant presence of sanitary authorities

The discourses reveal that the population greatly appreciates the constant presence, in dengue-afflicted areas, of sanitary authorities, visiting homes, controlling the presence of the vector, and helping the population in its domestic control of *A. aegypti*. This indicates a very important achievement in terms of educational results in dealing with diseases such as dengue, which is the imperativeness of promoting a constant educational activity, 'one-on-one' with the population.

Recommendations

- Maintaining the constant presence of sanitary

authorities in dengue afflicted-areas and maintaining educational work on a permanent basis.

- Elucidating – by means of educational campaigns and activities 'one-on-one' with the population, in schools, community centers, etc. – the basic characteristics of the disease, with special focus on sources of doubt and mistaken information.
- Providing clear information – without fear of causing panic – about the rapid spread of the disease and its ability to affect each and every one of us.
- Using the population's language in educational activities in general, but avoiding the loss of technical content.
- Presenting to the population, as an educational activity, the results of the present research.
- Conducting, as a routine procedure in healthcare facilities, quantitative and qualitative research aimed at gathering data for better following the behavioral aspects involved in the evolution of the epidemic.
- Training personnel for carrying out educational activities, based on research data.
- Designing educational material with front pages that do not emphasize the image of the adult vector; this will prevent the population from expecting control actions to be focused on the adult mosquito.
- Designing materials and developing educational strategies with emphasis on the joint enterprise of people and government in combating *A. aegypti* eggs and larvae.

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