

Construction and analysis of a questionnaire regarding the dengue campaigns aired on television in Brazil: results and future directions

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Abstract

This paper presents the construction and analysis of a large bank of items (573 items) for evaluation of short television films generated to stimulate dengue control and prevention, aired in Brazil during 2010 and 2011. Qualitative and quantitative analysis were conducted by reorganization of attributes, indicators and items, and statistical tests were carried out using SSPS software. From this analysis, a shorter questionnaire was constructed for an analysis of short films about dengue control. This questionnaire was administered to 684 students of different regions in Brazil who watched one short film on dengue prevention in 2012. The results show that the questionnaire was a good instrument to evaluate three attributes ("quality", "informative capacity" and "level of comprehensiveness"). For these attributes, there was a high level of agreement on endorsement. For the attribute "change of attitudes", there was no agreement toward endorsement. Also, identification of the change of attitudes had lowest standardized mean, suggesting that this was the least identified attribute in the film analysed. It was concluded that the film was not appropriate to strongly mobilize the participants in relation to the described attributes. Thus, this study suggests the need to reconsider the films about dengue control that are aired, in the Brazilian context.

Keywords: Brazil; Dengue film; Qualitative and quantitative assessment.

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Introduction

World populations, including that of Brazil, have dealt with recurrent epidemics of dengue. Dengue is one of the great public health challenges in the world, especially in tropical regions. Prevention and control of dengue is the responsibility of everyone in an affected population.

The efficiency of communication strategies to prevent and control dengue is an important issue.¹ Dengue control demands changes in individuals' perceptions about life in society, as well as more attention to social responsibility and circulation of information. This entails a collaborative "citizen approach" to develop an understanding that collective well-being is a way to develop personal well-being. However, the binomial "information – change of attitudes" does not feature as a direct aspect of social practices. This led to a consideration of the effectiveness and persuasiveness² of the campaigns for dengue control aired in Brazil.

This research is part of a Brazilian national and multicentre project on dengue. This project is currently being conducted in the states of Alagoas, Bahia, Distrito Federal, Mato Grosso do Sul, Minas Gerais, Paraná, Pernambuco and São Paulo. These states are from different regions in Brazil and have had high and low levels (depending on the year and the seasonal variation) of dengue incidence in recent years.

According to recent epidemiological data,³ there was a total of 204 650 reported cases of dengue in Brazil from 1 January to 16 February 2013. The centre-west (80 976) and south-east region (80 876) had higher incidence, followed by north (18 435), south (12 420) and north-east (11 943).

Among the methods of communication used for dengue control, short television films have featured widely, since they have received large investments from public sources. However, despite the importance of mobilization of these resources, there is little objective knowledge regarding the real impact and effectiveness of these campaigns.

The importance of the persuasive role of information in forming and changing values and attitudes is recognized.⁴ Thus, it is important to evaluate the impact and effectiveness of the short films about dengue control. This paper presents a review, validation and analysis of a questionnaire for evaluation of the short TV films aired in Brazil for the campaigns against dengue in 2010, 2011 and 2012.

The multicentre project representatives mobilized 133 respondents for the short films aired in 2010 and 2011; these were professors, PhD students, postgraduate students, undergraduate students from the field of education and health (the majority of the respondents) and professionals of the local health institutions (people with high school and undergraduate degree) of various Brazilian states. The questionnaire was applied in five Brazilian cities: Belo Horizonte, Londrina, Maringá, Matozinhos and Uberaba. In view of the results from its application, a shorter questionnaire was developed and administered to 684 students from different regions in Brazil.



Materials and methods

The construction of attributes and questionnaire validation

The authors proposed a large number of items (the longer questionnaire – 573 items comprising 19 pages) and this was structured as a checklist. The construction of the items represents a synthesis of a wide national and international review of the literature.⁵

The titles of the short films of the 2010–2011 governmental campaigns were: (i) mobilization; (ii) management; (iii) team of combat; and (iv) regional issues. The respondents watched all the films, and qualitative and quantitative analyses were conducted, based on their responses and on the items of the large questionnaire

From the qualitative analysis, a categorized system was constructed to evaluate the attributes. The attributes are parameters that specify distinct qualities of the instrument, reflecting the respondents' judgment and, consequently confirming the opinions. In view of these attributes, a series of indicators were outlined and grouped. The questionnaire was analysed based on the classification of the items according to the indicators for each attribute. This first analysis was conducted considering the instrument goals, its items and the respondents' responses. This process included: (i) construction of the indicators; (ii) checking the respondents' responses; (iii) re-evaluation of the categories; and (iv) restructuring of the system of categories. This system is presented in Table 1.

The qualitative analysis enabled reorganization of the attributes and indicators and was carried out using a double-check perspective, whereby two researchers constructed and validated the new system of categories). Then, quantitative analysis was developed with the support of SPSS software.

In order to verify the relevance of the instrument in relation to different aspects, the responses of the 133 respondents were used to validate the attributes and indicators.

Bearing in mind the results obtained, the following hypothesis and procedures to restructure the questionnaire were developed:

- questionnaire is too long, so respondents become too tired to respond – need to delineate a smaller number of items/questions;
- presence of random responses – need to redefine the items and reorganize them to improve reception of the questionnaire and make it more understandable;
- non-differentiation among the films regarding their convincing goals – need to restructure the films and the questionnaire itself.



Table 1: Attributes and descriptions of the indicators of the television films on dengue control

Attributes	Indicators	Descriptions
Judgment regarding the quality of the film	Video and audio sources	Characteristics that evaluate whether the video and the audio are synchronized with the parameters considered to be good/optimum to hold the viewers' attention
	Commercial appeal	Characteristics of the film related to its commercial appeal in the sense that the viewers can identify themselves with its content
Judgment regarding the informative capacity of the film	Communicability	Characteristic related to the film capacity to convey information properly
	Density of information	Characteristic related to the amount and the thoroughness of the content/information conveyed by the film
	Intelligibility	Characteristic that evaluates the explicitness of the film content and whether it is understandable to the viewers
Judgment regarding the capacity of the film to stimulate change of attitudes	Operational practices against dengue	Characteristic that evaluates whether the film stimulates or models preventive and community actions against dengue
	Content credibility	Characteristic related to the viewers' confidence in the information conveyed by the film
	Identification with the information from an emotional point of view	Characteristic related to the acceptability to viewers (positive or negative), of the information conveyed by the film
Level of comprehensiveness of the information conveyed by the film	Sociocultural aspects	Characteristic that evaluates the comprehensiveness of the film content in relation to the viewers' region, language and social situation
	Sex	Characteristic that verifies the level of comprehensiveness in relation to male and female viewers
	Colour	Characteristic related to the comprehensiveness regarding white, black and mulatto people.



Considering that each film should pursue a definite convincing goal – the results show non-significant differentiation among the persuasive goals of the films analysed. As mentioned earlier, this may reflect the inadequacy of the films or of the questionnaire itself. This pointed to the need for restructuring the questionnaire and a new application. Thus, new analyses were carried out to clarify more about the films and their impact on the students' responses.

Construction of the shorter questionnaire

The larger questionnaire was reduced to 24 dichotomous questions. Each attribute of the previous analysis was related to a set of items derived from the long questionnaire. These items comprise the new questionnaire.

The new instrument (hereinafter called “questionnaire”) presents a heading with information regarding the respondent population, namely sex, age, colour and religion. The analysed data were the responses of 684 students (9–13 years old) from different regions in Brazil (south, south-east, north-east, mid-west). A dichotomous matrix was constructed from the tabulation of responses.

The separation of the 24 questions into four attributes gave an acceptable number of items to evaluate each of these attributes. Since the number of items was different for each grouping, a standardized score was used to evaluate each attribute. In this way, the researchers worked with five score values (four scores for each of the attributes and one total score), varying from 0 to 1, and these represent the endorsement of each attribute, and of the questionnaire in general. Data were analyzed using SPSS software.

One of the short films about dengue that was aired was watched by the respondent population and they answered the questionnaire. The short film was part of the Brazilian campaign against dengue aired in 2012. A transcription is provided next.

[Alarm clock ringing – inside the clock there is the phrase: “It is always time to fight against dengue.”]

Health agent: “In Brazil there are various cities with risk of dengue epidemic, by means of SUS [Sistema Único de Saúde/Unified Health System], thousands of health agents, trained like me, are in the streets for the fight.”

Female citizen: “But it’s pointless if you do not participate.”

Male citizen: “Do your part.”

Health agent: “Every hour is the hour to fight against dengue. Take care of your home, speak with your neighbors and welcome the health agents. [at the same time, on the screen: “THE SUS IS WITH YOU IN THE FIGHT AGAINST DENGUE.”]

Health agent: “Together, we are stronger than dengue.”

[Alarm clock ringing again] – End of the film.



Examples of the questions in the questionnaire and their respective attributes are presented below:

- (1) Are the sounds of this film well-produced as in advertising?
() yes () no – “QUALITY ”
- (2) In this film, do you identify the places where the mosquitoes grow?
() yes () no – “INFORMATIVE CAPACITY”
- (3) Will your daily activities change because of this film?
() yes () no – “CHANGE OF ATTITUDES”
- (4) Do the characters of this film have any resemblance with people you know?
() yes () no – “LEVEL OF COMPREHENSIVENESS”

Data were analysed to identify which attributes were endorsed more by the respondents and how each attribute was endorsed. In addressing such issues, the film was evaluated in terms of quality, informative capacity, contribution to change of attitudes, and level of comprehensiveness of the information conveyed by the film.

Results

Two analyses were conducted, aiming to verify:

- (1) the adequacy of the instrument to evaluate the film’s quality, informative capacity, capacity to stimulate change of attitudes, and level of comprehensiveness;
- (2) the evaluation of a short film of the Brazilian Campaign against Dengue aired in 2012. This was accomplished by 684 respondents (students) from different regions in Brazil.

Analysis 1

The adequacy of the questionnaire to evaluate the attributes in the film was investigated by means of the distribution of the agreement percentage index (API). In this procedure, the percentage occurrence of the total and partial score values of each attribute was identified.

Table 2 shows the percentage corresponding to non-standardized score values for each attribute.

The dispersion around a central tendency is indicative of the level of agreement of the respondents. As seen in Table 2, the participants are in agreement with endorsing the attributes “quality”, “informative capacity” and “level of comprehensiveness”. For these

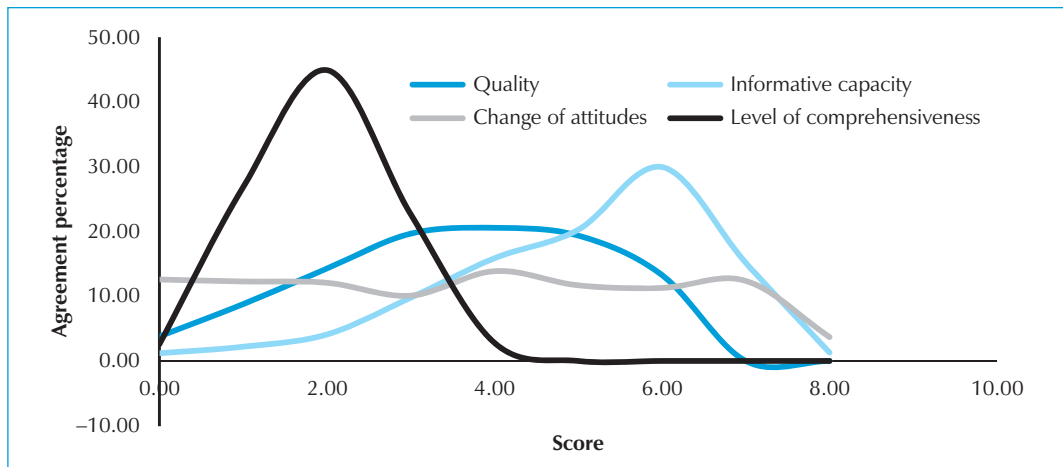


Table 2: Agreement percentage index (API) for each attribute

Score	Quality (score total = 6)	Informative capacity (score total = 8)	Change of attitudes (score total = 8)	Level of comprehensiveness (score total = 4)
0.00	3.80	1.20	12.60	2.60
1.00	8.80	2.20	12.30	26.90
2.00	14.30	4.10	12.10	45.00
3.00	19.70	9.80	10.10	22.70
4.00	20.60	15.90	13.90	2.80
5.00	19.40	20.30	11.70	NA
6.00	13.30	30.00	11.30	NA
7.00	NA	15.20	12.40	NA
8.00	NA	1.30	3.70	NA

NA: not applicable.

Figure 1: Dispersion of attributes agreement



attributes, a higher percentage is concentrated in three or four score values, while for the attribute “change of attitudes”, the percentage of all values is distributed more equally.

These results are illustrated by the dispersion Figure 1. It can be seen from this graph that there is no agreement among the participants when they evaluate the film’s capacity to stimulate change of attitudes, since there is no peak point (it is almost a homogeneous distribution).



This can be interpreted in two ways:

- (1) the set of items used to evaluate this attribute is not adequate. The dispersion of the responses indicates that the participants endorse the items differently. This may be a consequence of a weak delimitation of the “change of attitudes” attribute in the questionnaire questions;
- (2) the attribute is not recognized in the film by the participants. This means the capacity to stimulate change of attitudes is not well perceived by the participants. This is a negative result from the point of view of the campaign.

Analysis 2

To verify which attribute is more endorsed, in other words, how the respondents evaluated the film they watched, the means of the standardized scores were analysed.

Table 3 shows the standardized means of the scores for each attribute.

To ensure that these means are statistically different, a paired simple test was carried out. This test was chosen because the sample is not independent (the same sample is evaluated by the data of the four attributes). This method was applied in order to test two response pairs each time. Therefore, this checked whether the means related to the attribute pairs are significantly different. For this analysis, the following hypotheses were formulated:

- H0: $\mu_1 - \mu_2 = 0$ – the difference of the means for each pair (μ_1 and μ_2) is zero, they are equal;
- H1: $\mu_1 - \mu_2 \neq 0$ – the difference of the means for each pair is non-zero; they are statistically different.

Table 3: Standardized means of scores

Attribute	Mean	<i>n</i>	Standard deviation	Standard error of the mean
Quantity	0.593	684	0.274	0.010
Informative capacity	0.627	684	0.201	0.007
Change of attitudes	0.455	684	0.302	0.011
Level of comprehensiveness	0.490	684	0.210	0.008



Table 4: Correlations of paired samples

Standardized means correlated		<i>n</i>	Correlation	Significance
Pair 1	Quantity and informative capacity	684	0.476	0.000
Pair 2	Quantity and change of attitudes	684	0.602	0.000
Pair 3	Quantity and level of comprehensiveness	684	0.452	0.000
Pair 4	Informative capacity and change of attitudes	684	0.640	0.000
Pair 5	Informative capacity and level of comprehensiveness	684	0.314	0.000
Pair 6	Change of attitudes and level of comprehensiveness	684	0.466	0.000

Table 5: Paired samples test

Standardized means paired		Paired differences					<i>t</i>	df	Significance (2-tailed)
		Mean	SD	SEM	95% CI of the difference				
					Lower	Upper			
Pair 1	Quantity and informative capacity	-0.033	0.251	0.009	-0.052	-0.014	-3.520	683	0.000
Pair 2	Quantity and change of attitudes	0.137	0.258	0.009	0.118	0.157	13.946	683	0.000
Pair 3	Quantity and level of comprehensiveness	0.103	0.259	0.009	0.083	0.122	10.420	683	0.000
Pair 4	Informative capacity and change of attitudes	0.171	0.232	0.008	0.154	0.189	19.291	683	0.000
Pair 5	Informative capacity and level of comprehensiveness	0.137	0.241	0.009	0.119	0.155	14.866	683	0.000
Pair 6	Change of attitudes and level of comprehensiveness	-0.034	0.276	0.010	-0.055	-0.013	-3.248	683	0.001

CI: confidence interval; df: degrees of freedom; SD: standard deviation; SEM: standard error of the mean.



Table 4 shows the correlation between each variable (pair), and Table 5 shows the values obtained in the test and their statistical significance.

For the analysed sample, and with a level of significance of 5%, the null hypothesis is rejected (non-existence of significant difference between each pair of the population's means). In other words, all the means of the standardized score of each attribute pair are statically different ($t_1 = -3.520$, 683 df, $P = 0.000$); ($t_2 = 13.946$, 683 df, $P = 0.000$); ($t_3 = 10.420$, 683df, $P = 0.000$); ($t_4 = 19.291$, 683df, $P = 0.000$); ($t_5 = 14.866$, 683df, $P = 0.000$) and ($t_6 = -3.248$, 683df, $P = 0.001$).

For all attributes, a mean for the level of agreement (or endorsement) of around 50% was obtained. The most endorsed attribute was "Informative capacity", (mean = 0.627, standard deviation [SD] = 0.201), followed by "Quality", (mean = 0.594, SD = 0.274), and "Level of comprehensiveness (mean = 0.490, SD = 0.211), and, lastly the "Change of attitudes" (mean = 0.456, SD = 0.303).

This result suggests that the participants' understanding regarding the attributes was low. They had low recognition that the film they watched had the desirable characteristics to provide a "presentation of high quality", "sufficient information about dengue", "stimulus for change of attitudes" and "broad identification with the situation communicated by the film ". This result points to questions that should be considered in future campaigns – for instance, the possibility of attending to all these characteristics in a short film (30 s duration).

Among the endorsed attributes, the "informative capacity" was one that was most recognized by the participants. This means they recognized that the film has important and relevant information about dengue.

The capacity to stimulate "change of attitudes" was the least-endorsed attribute. This result indicates that this attribute is difficult to access, and that the film does not provide a clear message regarding this attribute.

Discussion

The analysis presented indicates that the questionnaire is a good instrument to evaluate three attributes ("quality", "informative capacity" and "level of comprehensiveness"), since the respondents were in full agreement on how to endorse it. For the attribute "change of attitudes", however, there was no agreement toward endorsement and it was the attribute identified least by participants, in the film analysed. It can be concluded that, for this attribute, the film does not contribute to participants' change of attitudes.

To support this conclusion, each mean was calculated, and "the change of attitudes" was the attribute with lowest standardized mean. This confirms that this attribute is not well-recognized in the film watched.



The respondents considered the attribute “informative capacity” as the most relevant, although for all these three attributes (“quality”, “informative capacity” and “level of comprehensiveness”), the endorsement was relatively low.

It is concluded that the film is not appropriate to strongly mobilize people in relation to the described attributes. The film watched definitely had a low impact on the participants. Thus, this study suggests the need to reconsider the films about dengue control that are aired, in the Brazilian context.

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