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Validation of a documentary on Chagas disease by a population living in an endemic area

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(With 1 figure)

Abstract

Educational interventions may trigger actions that contribute to prevent parasitic diseases, such as Chagas disease (CD). This study aimed at investigating the impact of an instructional video named "Documentary on Chagas Disease" on knowledge about CD and its vectors displayed by a population that lives in an endemic area in Brazil, so as to validate it as an educational tool. The video was shown to 226 subjects, divided into two groups. Group 1 was composed of users of Basic Health Units (BHU) in Pelotas and Pinheiro Machado, cities located in Rio Grande do Sul (RS) state, Brazil, where CD is endemic. Group 2 consisted of students who attend three public schools located in the rural area in Pinheiro Machado, RS. Two questionnaires with questions about their knowledge about triatomines and CD were applied, before and after the documentary was shown. After the video was shown, there was significant increase in individuals' knowledge (in both groups) about "kissing bugs", their notification, the disease and its prevention. Besides, watchers considered that the quality of the material was satisfactory. Since the "Documentary on CD" can be easily accessed on the internet and was effective in teaching the population that lives in endemic areas, its use should be encouraged in places and meetings connected to health that aim at fighting against triatominae and at exposing an updated view of CD.

Keywords: knowledge, *Trypanosoma cruzi*, health education, educational tool.

Validação de um documentário sobre a doença de Chagas por uma população de área endêmica

Resumo

Intervenções educacionais podem desencadear ações que contribuam para a prevenção de doenças parasitárias, como a doença de Chagas (DC). Este estudo teve como objetivo investigar o impacto de um vídeo instrucional denominado "Documentário Doença de Chagas" no conhecimento sobre DC e seus vetores exibidos a uma população que vive em área endêmica no Brasil, para validá-lo como uma ferramenta educacional. O vídeo foi exibido para 226 indivíduos, divididos em dois grupos. O grupo 1 foi composto por usuários das Unidades Básicas de Saúde (UBS) de Pelotas e Pinheiro Machado, cidades do estado do Rio Grande do Sul (RS), Brasil, onde a DC é endêmica. O grupo 2 foi formado por estudantes que frequentam três escolas públicas localizadas na zona rural de Pinheiro Machado, RS. Dois questionários com perguntas sobre conhecimentos sobre triatomíneos e DC foram aplicados, antes e depois da exibição do documentário. Após a exibição do vídeo, houve um aumento significativo no conhecimento dos indivíduos (em ambos os grupos) sobre "triatomíneos", sua notificação, a doença e sua prevenção. Além disso, os observadores consideraram que a qualidade do material era satisfatória. Como o "Documentário DC" pode ser facilmente acessado na Internet e ser eficaz no ensino à população que vive em áreas endêmicas, seu uso deve ser incentivado em locais e reuniões relacionadas à saúde, que visam combater os triatomíneos e exibir uma informação atualizada sobre a DC.

Palavras-chave: conhecimento, *Trypanosoma cruzi*, educação em saúde, ferramenta educacional.

1. Introduction

Chagas disease (CD), which was described by the Brazilian physician and researcher Carlos Chagas in 1909 (Chagas, 1909), is caused by the flagellated protozoan *Trypanosoma cruzi* and transmitted to humans by hematophagous hemiptera which belong to the subfamily Triatominae. The protozoan can also be transmitted in other ways, such as blood transfusion, organ transplantation, congenital transmission, laboratory accidents and oral

transmission (Moncayo and Silveira, 2009; Howard et al., 2014; Rassi Junior et al., 2010). This disease has a marked medical and socioeconomic impact, since there are about 8 million people who are infected by *T. cruzi* and around 10,000 deaths annually worldwide, is responsible for high rates of morbidity, affecting around six to eight million people in Latin America and with 90-120 million people at risk. (Garcia et al., 2016; Silva et al., 2019).

The clinical aspects of Chagas disease, the biology, morphology and behavior of *Trypanosoma cruzi*, are the focus of several studies, since variations in the structures involved in parasitism of the vertebrate host have been recorded (Vallejo et al., 1988; Garcia et al., 2011). However, one of the major ways of preventing new CD cases from being acquired is to control the vector, because the elimination of triatominae in households and surroundings decreases the chances these insects have to reach human blood (Silveira and Rezende, 1994). Therefore, it is fundamental to make people who live in endemic areas build healthy habits to improve their welfare. The higher their knowledge about triatominae and CD, the better their actions against the disease and surveillance of its vectors (Villela et al., 2009; Albagli, 1996).

Educational interventions are capable of triggering actions that contribute to prevent parasitic diseases, such as CD. Learning from different activities, such as audiovisual material applied to health campaigns, may encourage prevention measures if they are associated with people's everyday lives (Moraes, 2008; Grimes et al., 2013). Health education is extremely relevant, since it may lead to long-lasting and meaningful results (Grimes et al., 2013). The teaching process aims at showing people some adequate habits and behavior, so that they are able to carry out changes in their lives and in the place they live. Thus, the use of different teaching strategies helps a person to identify problems, reflect on situations and develop solutions in search for individual and collective health (Brasil, 1998; Ferreira and Andrade, 2005).

Therefore, this study aimed at investigating the impact of an instructional video about CD and its vectors on a population that lives in an endemic area in Brazil, so as to validate it as an auxiliary educational tool of CD prophylaxis and control.

2. Methods

2.1. Population groups and study area

This cross-sectional study is based on qualitative instruments, i. e., semi-structured interviews with open and closed questions, applied to two different population groups.

Group 1 was composed of patients of two Basic Health Units (BHU) in Pelotas and Pinheiro Machado, cities located in south of Rio Grande do Sul (RS) state, Brazil (Figure 1A). Group 2 consisted of students who attend from the 6th to the 9th grades in three public Elementary Schools located in the rural area in Pinheiro Machado, RS (Figure 1B).

Residents of Pelotas, RS, and Pinheiro Machado, RS, were chosen to take part in this study because both cities are considered CD endemic areas. They had high levels of household infestation by *Triatoma infestans* in past decades and there has been notification of *Triatoma rubrovaria* specimens lately (Priotto et al., 2014).

2.2. Data collection and the exhibition of the documentary

Data collection started after participants signed the Informed Consent Forms (ICF). Questionnaires were composed of socioeconomic and sociodemographic questions, besides others that evaluated participants' knowledge about CD and its vectors (including their identification). They were applied before and after the video exhibition.

The first questionnaire was applied to both Group 1 and Group 2 and the documentary named "Documentary on CD" was shown. This video, which lasts 21'31", was produced by our research group and was made available at YouTube® (2019). It was also the theme of a scientific presentation (Bianchi et al., 2018). The video shows general aspects of CD, its vectors and common places where "kissing bugs" can be found and the Housing Improvement Program for Chagas Disease Control, which aims at broadening concepts of household cleanliness and organization, as well as care for its surroundings. After the video exhibition, the part of the questionnaire which evaluated participants' knowledge about the disease and its vectors was re-applied so as to analyze their learning and awareness processes after having watched the video. Participants were asked to give their individual opinions (qualitative and quantitative concepts) about the video.

Figure 1. (A) Patients of Basic Health Units in Pelotas, RS, Brazil; (B) Students who attend from the 6th grades in public Elementary School located in the rural area in Pinheiro Machado, RS.

Finally, leaflets which focused on "kissing bugs" and CD control, were distributed.

2.3. Data organization and analysis

Data resulting from participants' answers were organized and processed by Microsoft Excel®. Firstly, a descriptive analysis of sociodemographic factors was carried out; results were expressed as frequencies (%). Afterwards, the analysis of sociodemographic variables and knowledge exhibited by Groups 1 and 2, before and after watching the video, was conducted by the Chi-square Test (χ^2). Value-p was found to calculate the difference among ratios; values of $p \leq 0.05$ were considered significant.

2.4. Ethical and legal issues of the study

The study was carried out in compliance with Resolution nº. 466/12, issued by the National Health Council and the research agency Coordenação de Aperfeiçoamento de Pessoal de Nível Superior- Brasil (CAPES), whose financing code is 001. The project was approved by the Ethics Committee (nº. 1001545).

In order to have the study approved by the BHUs, the proposal was presented to City Health Department. The brief description highlighted its objectives and methodology. Likewise, visits were paid to the schools in order to get authorization and explain the objectives of the study to principals, teachers and parents. All participants signed the ICFs, while they were granted anonymity and freedom to choose whether they wanted to keep participating in the study.

It should be highlighted that, after data were collected, the researcher was willing to give more details about the study and the theme under investigation and clarify participants' doubts.

3. Results

3.1. Characterization of participating groups

In this study, 226 subjects who live in CD endemic areas contributed to the validation of the video "Documentary on CD". Seventy-six out of 226 subjects composed Group 1, i. e., 47 were patients at the BHU Simões Lopes, in Pelotas, RS, while 29 were patients at the BHU located in a rural area in Pinheiro Machado, RS. Group 2 consisted of 150 students who attended from the 6th to the 9th grades in three public Elementary Schools located in the rural area in Pinheiro Machado, RS.

Regarding participants' socioeconomic issues (Table 1), data showed that in Group 1, 84.2% (64) of interviewees were female and that 40.7% (31) were over 61 years old. Concerning schooling, 51.3% (39) had not finished Elementary School, 59.2% (45) had a family whose income was below

Table 1. Socioeconomic data of the two population groups (Group 1 and Group 2) from the endemic area for the DC in RS.

Variables	Total participants (n* = 226)	
	Group 1 (n* = 76)	Group 2 (n* = 150)
	n* (%)	n* (%)
Age group		
9-12	-	49 (32.7)
13-15	-	76 (50.7)
16-18	-	25 (16.6)
19-35	16 (21.1)	-
36-60	29 (38.2)	-
≥60	31 (40.7)	-
Gender		
Male	12 (15.8)	78 (52.0)
Female	64 (84.2)	72 (48.0)
Family income		
≤ 1 minimum wage**	45 (59.2)	127 (84.7)
> 1 minimum wage**	31 (40.8)	23 (15.3)
Educational level		
4th -5th year	-	16 (10.7)
6th-7th year	-	78 (52.0)
8th-9th year	-	56 (37.3)
Incomplete elementary school	39 (51.3)	-
Finished elementary school or more	37 (48.7)	-
Have you resided in the rural area?		
Yes	44 (57.9)	-
No	32 (42.1)	-
Housing: How was it (who lived in the rural area of Group 1) and how is it (Group 2)?		
Brick construction with cement	27 (61.4)	137 (91.4)
Brick construction with cracks	7 (15.9)	2 (1.3)
Brick and wood construction	2 (4.5)	7 (4.7)
Wooden construction	1 (2.3)	2 (1.3)
Wattle and daub house/ clod or mud building	7 (15.9)	2 (1.3)

*n=number of participants. **Minimum wage in Brazil = R$ 954.00 (approximately US $ 256.44 in October 2018).

a minimum salary and 57.9% (44) had already lived in rural areas (8 of them – 18.2% – had lived in wood, clod, wattle and daub or mud houses). In Group 2, 76 (50.7%) out of 150 students were between 13 and 15 years old. The group is composed of students whose families have low income, i. e., 84.7% (127) said that their families earn less than a minimum salary, and all live in the rural area in Pinheiro Machado, RS.

3.2. Knowledge about CD and its vectors

Most interviewees that belonged to Group 1 had already heard about "kissing bugs" or "vampire bugs", mainly the ones who had already lived in rural areas, and knew that these insects transmit a disease known as CD (Table 2). They said that they feel bad for not having further information on the disease and 22.3% mentioned they had already found triatominae inside their households and surroundings.

Table 2. Knowledge about Chagas' disease and its vectors, and opinion about the documentary shown, of population groups (Group 1 and Group 2) coming from an endemic area for DC in RS.

Variables	Total participants (n* = 226)		p**
	Group 1 (n* = 76)	Group 2 (n* = 150)	
	n*(%)	n*(%)	
Ever heard of "kissing-bug"?			
Yes	58 (76.3)	131 (87.3)	-
No	18 (23.7)	19 (12.7)	
Do you know if they transmit any disease?			
Yes	65 (85.5)	137 (91.3)	
No	1 (1.3)	13 (8.7)	-
No know	10 (13.2)	-	
Which disease?			
Chagas's Disease	52 (68.4)	68 (45.3)	0,0246
No know	24 (31.6)	82 (54.7)	
Do you know any ICT (Information Center on Triatominae)?			
Yes	12 (15.8)	4 (2.7)	0,0013
No	64 (84.2)	146 (97.3)	
Have you found "kissing-bug"?			
Yes (house)	9 (11.8)	19 (12.7)	
Sim (peridomicíle)	8 (10.5)	19 (12.7)	-
No	59 (77.7)	112 (74.6)	
Have you ever heard of DC?			
Yes	65 (85.5)	97 (64.7)	-
No	11 (14.5)	53 (35.3)	
Do you consider it important to take care of the peridomicile and animals not to acquire the DC?			
Yes	66 (86.8)	129 (86.0)	-
No	7 (9.2)	21 (14.0)	
No know	3 (4.0)	-	
Do you know any family member who have/had CD?			
Yes	13 (17.1)	5 (3.3)	0,0011
No	63 (82.9)	145 (96.7)	
Do you miss more information about "kissing-bug" and DC?			
Yes	67 (88.2)	106 (70.7)	
No	9 (11.8)	44 (29.3)	-
What did you think of the video?			
More or less	2 (2.6)	33 (22.0)	
Good	17 (22.4)	68 (45.3)	-
Great	57 (75.0)	49 (32.7)	
Note for video			
6-7	3 (4.0)	30 (20.0)	0,0001
8-9	11 (14.4)	53 (35.3)	
10	62 (81.6)	67 (44.7)	
Did you convey the information clearly?			
Yes	71 (93.4)	100 (66.7)	
More or less	2 (2.6)	48 (32.0)	
No	3 (4.0)	2 (1.3)	

*n=number of participants. **p-value> 0,05 was considered significant.

Likewise adults (Group 1), most students (Group 2) had already heard about "kissing bugs". Even though both groups had already heard about this theme, when they were asked about the name of the disease, adults showed that they knew significantly more than students (p=0.0246). Concerning the fact they had seen "kissing bugs", 25.3% (38) of students had already found triatomines inside their households and surroundings. Likewise Group 1, most students (70.7%) would like to have more information on CD and its vectors.

Another aspect related to participants' knowledge about the theme under investigation (Table 2) which is worth emphasizing is that in both Group 1 and 2, few people had heard about the Information Center on Triatominae (ICT), although adults (15.8%) knew significantly more than students (2.7%) (p=0.0013).

Concerning the question which asked whether participants knew any family member who had CD, just 3.3% (5) of students (Group 2) answered positively. It is an important difference, since Group 1 interviewees (adults) mentioned that they knew people who had (or had had, in the past) CD significantly more often (p= 0.0011).

3.3. Evaluation of the documentary on CD and its vectors

Regarding participants' opinions about the documentary they watched (Table 2), 75% (57) of Group 1 subjects found it excellent while 81.6% (62) attributed the highest grade of satisfaction and 93.4% (71) said that information was clearly transmitted.

The video did not seem to be so understandable in the students' opinions, even though most considered it didactic (78% evaluated it as being good or excellent), i. e., 32.7% (49) found it excellent and 44.7% (67) attributed 10, the maximum grade, by comparison with 75% and 81.6% of participants interviewed in the BHUs, respectively (p>0.0001).

3.4. Impact of the documentary on CD and its vectors on the knowledge shown by the population under evaluation

Table 3 compares knowledge of Groups 1 and 2, before and after the exhibition of the instructional video on CD and its vectors. There was increase in the number of participants who identified the insects correctly in both groups after the documentary was shown. It is evidence of the fact that understanding of CD and its vectors increased in both groups (adult patients in the BHUs and students). Before watching the video, 50.7% (76) of students recognized "kissing bugs" whereas 92% (138) students recognized them after having watched the video. It meant a significant increase in the identification of the CD infectious agent (p<0.0001).

It should be highlighted that, before watching the video, 68.4% (52) of Group 1 and 95.3% (143) of Group 2 interviewees did not know where to look for "kissing bugs" while cleaning their household units (HU, which comprised their households and surroundings), but these numbers dropped to 15.8% and 10.7%, respectively. It shows that, after having watched the video, they knew where vectors could hide and reported certain spots, such as "behind paintings" and "under mattresses".

Participants in both groups also showed important changes in knowledge about the development of "kissing bugs" colonies (called "nests"), before and after watching the video. In Group 1, the percentage of subjects who did not know where they could grow decreased from 57.9% (44) to 15.8% (12) after they watched the documentary. Besides, there was significant increase (p<0.0001) in answers that referred to chicken coops as important spots. Likewise, in Group 2, before watching the video, 94% (141) of students did not know where colonies could be found, but, after watching it, only 12% (18) did not mention common spots where triatominae colonies developed. Thus, the video significantly increased the chances students had to inform the main spots where vectors make their "nests" in households and surroundings, especially chicken coops (p<0.0001).

Another result that should be emphasized is that 52.6% (40) of Group 1 subjects would carry out inappropriate procedures if they faced a vector (when "would do nothing" and "would kill the insect" are considered), before watching the video, but this percentage dropped to 11.8% (9 people, p<0,0001). Thus, 88.2% of patients would act correctly after having watched the video, i. e., they would capture the triatominae and hand the suspicious insect to a Secretariat of Health, ICT or health agent. It also happened in Group 2, since 54% (81) of students said (after having watched the video) that they would hand the specimen to either the health department or the ICT, by comparison with 30% of students who were aware of what to do before watching the video (p<0.0001).

The fact that only 11.8% (09) of Group 1 participants knew of other forms of CD transmission, apart from the vector, before watching the video was also significant, since it increased to 75% (57 people, p<0.0001), after the video was shown. Likewise, 90% (135) of students (Group 2) did not know about it. This percentage was 55,3% (p<0.0001) after the video exhibition, since understanding of the topic increased.

Regarding damage caused by the disease, before the video, 52.6% (40) of Group 1 participants did not know which organs were affected by it or had incorrect information on the topic and cited liver, lungs and kidneys as the aim of the pathogenic activity of *T. cruzi*. Afterwards, 100% of them mentioned which organs are affected (heart, esophagus, large intestine; p=0.0006). In Group 2, more than 60% of participants did not know which organs are affected by DC, but, after watching the video, 100% of students mentioned some organ correctly (p<0.0001).

Concerning prophylaxis, most Group 1 interviewees did not know what to do to avoid CD (52.6%) before watching the video, but 97.4% learned what to do (p<0.0001) after the instructional tool was applied. The same happened to Group 2 students, since most did not know what to do to avoid CD (94.7%). After watching the video, 80.7% cited the right procedures (p<0.0001).

Table 3. Knowledge of population groups (Group 1 and Group 2) before and after the presentation of the educational video about Chagas disease and its vectors.

Variables	Group 1 (n* = 76)		Group 2 (n* = 150)		p**
	Before video	After video	Before video	After video	
	n* (%)	n* (%)	n* (%)	n*(%)	
Did you recognize the "kissing-bug"?					
Yes	45 (59.2)	54 (71.0)	76 (50.7)	138 (92.0)	
No	31 (40.8)	22 (29.0)	74 (49.3)	6 (4.0)	0,0001
IGN***	-	-	-	6 (4.0)	
What does the "kissing-bug" feed on?					
Blood of people	10 (13.2)	5 (6.6)	41 (27.3)	9 (6.0)	
Blood of animals	8 (10.5)	3 (4.0)	4 (2.7)	2 (1.3)	-
Either	37 (48.7)	68 (89.4)	98 (65.3)	139 (92.7)	
No know	21 (27.6)	-	7 (4.7)	-	
During the cleaning inside the UD where "kissing-bug" should be observed?					
IGN***	-	12 (15.8)	-	16 (10.7)	
No know	52 (68.4)	-	143 (95.4)	-	
House dick	3 (3.9)	-	-	-	
Behind paintings, mattresses	-	44 (57.9)	-	88 (58.7)	
Household grooves, woods	5 (6.6)	9 (11.8)	2 (1.30)	5 (3.3)	0,0001
Chicken coop, stye	-	11 (14.5)	-	-	
Nests of birds and chicken coop	-	-	1 (0.7)	11 (7.3)	
Barn, sheds	12 (15.8)	-	-	-	
Other	4 (5.3)	-	4 (2.6)	-	
Where does the largest nesting of "kissing-bug" nests occur?					
IGN***	-	12 (15.8)	-	18 (12.0)	
No know	44 (57.9)	-	141(94.0)	-	
Chicken coop	4 (5.3)	30 (39.5)	-	65 (43.3)	0,0001
Household grooves, mattresses	5 (6.6)	6 (7.9)	-	8 (5.3)	
Stones, debris	17 (22.4)	16 (21.0)	-	29 (19.4)	
Nests of birds	-	-	-	30 (20.0)	
Standing water	-	-	5 (3.3)	-	
Other	6 (7.8)	12 (15.8)	4 (2.7)	-	
What do you do if you meet "kissing-bug"?					
Do nothing	13 (17.1)	1 (1.3)	6 (4.0)	2 (1.3)	
Kill the insect	27 (35.5)	8 (10.5)	99 (66.0)	67 (44.7)	0,0001
Health agent	13 (17.1)	36 (47.4)	24 (16.0)	42 (28.0)	
Secretariat of Health	18 (23.7)	21 (27.6)	12 (8.0)	7 (4.7)	
ICT(Information Center on Triatominae)	5 (6.6)	10 (13.2)	9 (6.0)	32 (21.3)	
Where's there another way to get DC besides the insect?					
No know	40 (52.6)	-	135(90.0)	-	
Yes	9 (11.8)	57 (75.0)	4 (2.7)	83 (55.3)	0,0001
No	27 (35.5)	19 (25.0)	11 (7.3)	67 (44.7)	
Do you know what organs this disease can reach?					
No know	26 (34.2)	-	93 (62.0)	-	
Liver, lung, kidneys	14 (18.5)	-	14 (9.3)	-	
Esophagus	1 (1.3)	2 (2.6)	2 (1.3)	5 (3.3)	
Intestine	3 (3.9)	3 (3.9)	3 (2.0)	7 (4.7)	0,0001
Heart	25 (32.9)	28 (36.8)	38 (25.4)	71 (47.3)	
Intestine and heart	6 (7.9)	17 (22.4)	-	16 (10.7)	
Esophagus, intestine and heart	1 (1.3)	26 (34.3)	-	51 (34.0)	
What should be done to avoid DC?					
IGN***	-	2 (2.7)	-	29 (19.3)	

*n:=number of participants. **p-value> 0,05 was considered significant. ***IGN=ignored.

Table 3. Continued...

Variables	Group 1 (n* = 76)		Group 2 (n* = 150)		p**
	Before video	After video	Before video	After video	
	n* (%)	n* (%)	n* (%)	n*(%)	
No know	40 (52.6)	-	142(94.7)	-	
Cleaning and hygiene	19 (25.0)	54 (71.0)	3 (2.0)	61 (40.7)	
Eliminate the insect	11 (14.5)	16 (21.0)	-	47 (31.4)	0,0001
Do not be stung	-	-	5 (3.3)	-	
Insecticide	-	-	-	8 (5.3)	
Other	6 (7.9)	4 (5.3)	-	5 (3.3)	

*n:=number of participants. **p-value> 0,05 was considered significant. ***IGN=ignored.

4. Discussion and Conclusions

According to Silva et al. (2003), residents must be instructed on spots where vectors can be found and measures that must be taken to control them. Besides, entomological surveillance must be permanent to enable triatominae to be detected precociously. Abad Franch et al. (2011) agree that entomological surveillance must be based on the community's participation in specific long-term actions in health education. Therefore, results of this study suggest that guidelines shown by the "Documentary on CD" must contribute to control triatominae and CD positively, besides impacting on existing actions and policies on health services.

Both groups under study had good previous knowledge about triatominae identification and its role in CD transmission. Even though their knowledge increased significantly after the video exhibition, the previous one may be explained by the fact that most adults (Group 1) and students (Group 2) lived or had lived in rural areas. Dias et al. (2016) showed that residents in rural areas were the ones that could easily identify CD vectors, since these insects are more common in these places. As a result, actions which aim at controlling the vectors are also more common in these areas.

Concerning the increase in references to chicken coops as spots where colonies of vectors grow, both groups were observed to get more aware after watching the video. According to Silva et al. (2004), most triatominae colonies found in São Paulo state, Brazil, were located close to households and chicken coops (73.5% of cases) were mostly responsible for housing these insects. A study carried out by Villela et al. (2010) in Minas Gerais state, Brazil, showed that 70% of blood identified in the digestive tube of captured triatominae came from poultry (possibly chicken). As a result, the population must be warned to keep chicken coops organized and clean since they may shelter and feed triatominae (Villela et al., 2010).

In this study, it should also be highlighted that more than 50% of interviewees (mainly children) had inadequate attitudes, such as "killing the kissing bug", when they found a vector, before watching the documentary. However, they got better understanding of measures they should take, after watching the instructional video. According to Maeda and Gurgel-Gonçalves (2012), the practice of killing triatominae as soon as they are found does not collaborate with CD surveillance, since insects must be kept alive, be notified and undergo parasitological exams. Inadequate attitudes were also observed by Falavigna-Guilherme et al. (2002) in Paraná state and by Silva et al. (2004) in São Paulo state, Brazil. Villela et al. (2009) compared adults and children in an endemic area in Minas Gerais, Brazil, and observed that adults (67.6%) took the right decision more often than children (45%) when they found vectors. It may result from the fact that adults have more experience concerning notification rules issued by the Program for Chagas Disease Control. These data corroborate findings of the study reported by this paper.

Perception of the severity of CD is as important as recognizing the vector. After the documentary was shown, there was significant increase in the number of participants – in both groups – who could identify organs that are affected by the disease. All interviewees cited at least one organ, such as the heart, that can be damaged. With regards to this topic, these data corroborate the ones found by Williams-Blangero et al. (1999) and Silveira et al. (2009), in northeastern Goiás state, Brazil, since the heart was the most cited organ by participants in the study.

It should also be pointed out that, after the application of the instructional video, there was significant increase in the number of adequate attitudes towards triatominae and CD, mainly vector control, in both groups. Silva et al. (2004) carried out a study in two cities in São Paulo state, Brazil, and showed that, in 50.0% of households, there were people who did not know what to do in case they found the insect inside their houses. In the study conducted by Villela et al. (2009), 18.4% of adults and 36.2% children could not mention any attitude that could avoid/fight the vectors, even though they lived in a city which is a positive reference in CD control (Bambuí, MG). It is an evidence of shortage of information on triatominae control. Since the video used by this study, which is free and easily accessed on the internet, was effective in teaching the population under investigation, this study recommends that it should also be used to raise awareness in other regions.

Sanmartino and Crocco (2000) stated that knowledge about CD and its vectors means important advance in the struggle against the disease and makes residents in endemic areas better understand their reality while acquiring habits that enable them to take control of their own welfare.

Therefore, one of the main objectives of this study was accomplished, i.e., it broadened people's understanding of concepts and prevention of CD, which were its focuses. The instructional video on the disease and its vectors was effective, since there was significant increase in knowledge acquired by both groups under study.

Despite some limitations, such as the application – and validation – of this educational tool to other population groups, this study brings important contribution to the theme, since most interviewees said that the video was clear and made them understand the topic better. Since the "Documentary on CD" can be easily accessed on the internet and was effective in teaching the population that watched it, its use should be encouraged in places and meetings connected to health that aim at fighting against triatominae and at exposing an updated view about the CD.

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