
Evaluating the effect of a television public service announcement about epilepsy

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Abstract

Public service announcements (PSAs) are non-commercial advertisements aiming to improve knowledge, attitudes and/or behavior. No evaluations of epilepsy PSAs exist. This study sought to evaluate a televised PSA showing first aid for a seizure. A multilevel regression analysis was used to determine the effect of the PSA on epilepsy knowledge and attitudes taking into account school-level clustering as well as individual-level variables, including socioeconomic status, gender, language and familiarity with epilepsy. Of the 803 randomly selected Grade 5 (9–11 years) students, 406 (51%) had seen the epilepsy PSA. Those who saw the PSA scored significantly higher on knowledge ($P < 0.001$) and had more positive attitudes ($P < 0.001$) about epilepsy. Those who saw the PSA had even greater knowledge about epilepsy 1 month later, even though the PSA was no longer being televised. Having viewed, the PSA continued to be associated with higher knowledge and more positive attitudes independent of the effects of a school-based epilepsy education program.

Introduction

Epilepsy remains misunderstood and unaccepted worldwide, even though it is the most common neurological disorder globally [1–3]. Epilepsy is the collective term for seizure disorders. The World Health Organization (WHO), International League against Epilepsy (ILAE), International Bureau for Epilepsy (IBE) [4] and the Canadian Epilepsy Alliance (CEA) [5] indicate that addressing the lack of knowledge and stigma associated with epilepsy is a priority. For those with epilepsy, stigma may impede their employment opportunities, housing and access to medical care [1, 6]. If the goal is to ultimately decrease stigma toward those who have epilepsy, based on Fishbein and Ajzen's Theory of Planned Behavior, one can anticipate that interventions that aim to increase knowledge and foster positive attitudes about epilepsy should help reduce the associated stigmatizing behaviors [7].

There are several potential approaches to increase knowledge and foster positive attitudes about epilepsy. Television (TV) may serve as a particularly important medium for increasing knowledge and positive attitudes about epilepsy since previous research has shown that those who have the poorest epilepsy knowledge and attitudes are older, have less formal education and have a lower

socioeconomic status (SES) and this is also the profile of the population who watch a lot of TV [8]. TV also plays a disproportionate role as a source of information for children and represents an opportunity to influence their knowledge and attitudes [9]. Recent discussions in the literature emphasize the need for research into the impact of public service announcements (PSAs) (also known as non-commercial advertisements) because it is known that, on average in North America, by the time a student graduates from high school, he/she will have devoted more time to watching TV than hours spent in school [10].

The previous literature mainly addresses PSAs for smoking cessation [11], violence reduction [12] and HIV prevention [13]. There are no publications about the use of PSAs for epilepsy. There are few rigorous studies evaluating the effectiveness of health PSAs, although they are felt to be a good approach for disseminating health information [14, 15]. One recent article [16] demonstrated that PSAs can have a potential role in disseminating information about healthy eating to preschoolers.

The primary objective of this study was to assess the proportion of Grade 5 students who had seen the PSA and then evaluate the ability of the PSA about epilepsy to increase Grade 5 students' knowledge and positive attitudes about epilepsy. A secondary objective was to evaluate whether the PSA influenced knowledge and positive attitudes about epilepsy independent of the effect of a school-based epilepsy education program.

Methods

The ABCs of Seizure Management PSA

A 60-s PSA about epilepsy was developed by the British Columbia Centre for Epilepsy and Seizure Education in conjunction with the CEA. The PSA depicts a tonic-clonic seizure. This PSA was the first of a series of PSAs that were later developed and include absence seizures and complex partial seizures. The information provided in the PSA was designed to influence knowledge about appropriate seizure response (first aid) and also to foster

positive attitudes toward people who have epilepsy. In the PSA, a boy falls off a swing in the playground and begins to have a seizure. Surrounding children provide first aid for a generalized seizure. Since its development in 2002, the playground PSA has been considered the premier teaching tool by nurses who provide education about epilepsy in British Columbia, Canada [17].

The PSA was developed with the theme line (main idea with 'headline'): the ABC's of Seizure Management in 60 s deliver first aid for a tonic-clonic seizure. The PSA was produced using a Betacam and a jib arm. Stock music from Rogers Cable was used. The PSA was filmed at a city park in Abbotsford, British Columbia, Canada. All the labor, child actors, film and equipment were donated in-kind with an estimated value of at least \$15 000 Canadian [17]. It took 1 week to develop the script with three contributors (a journalist, a pediatrician and a neurologist), casting the actors took 3 days and then script rehearsal and preproduction spanned 2 weeks. The production itself involved an 8-hour film shoot and final editing took 2 weeks. Previously published research on the effectiveness of PSAs informed the development of the ABCs of Seizure Management PSA. Having a clear objective audience and novel message were key aspects to ensuring the TV PSA would be most conducive to changing knowledge and attitudes [8, 15, 18–20].

To begin, it is recommended that PSAs have realistic objectives [21]. The main objective of the ABCs of Seizure Management PSA was to raise awareness of epilepsy and the first aid steps for a tonic-clonic seizure. This objective was chosen since it has been shown that awareness-raising PSAs are the most likely type to show an effect and can prepare the audience for future messages [18]. This matched well with the CEA's plans to increase educational programming about epilepsy in the community through other means following the broadcasting of the PSA. The components and benefits of an awareness-raising PSA such as this one include conveying messages about the importance of epilepsy, as well as new information about first aid for a seizure and encouraging sensitization or seeking of further information about epilepsy.

The selection of the intended audience for a PSA about epilepsy was also an important part of the development. The audience is ideally one that is most amenable to influence and also one where attitude or behavior changes are desired [18]. Children were chosen as the intended audience for the ABCs of Seizure Management PSA since children are likely more amenable to influence compared with adults [22] and because previous focus groups with children and families affected by epilepsy demonstrated that changing children's knowledge and attitudes about epilepsy was a priority [23].

Previous research has shown that it is preferable to present message content that links the desired health behavior to valued attributes or consequences that serve as positive incentives, such as appearing cool, gaining approval and respect, forming deeper friendships, building trust with parents, acting intelligently and being a good role model [24, 25]. The epilepsy PSA shows children being role models, acting intelligently and being a friend. It is also often useful to provide evidence supporting claims made in the message. While statistics or quotations from experts are often used, because children were the target audience, the epilepsy PSA uses dramatized case examples (child having a tonic-clonic seizure), which have been demonstrated to work better for populations where statistics and data would likely fail. The PSA was filmed in a playground since previous research has shown that PSAs are most successful when they show how the situation is similar to that experienced by the target audience, in this case children. Selecting the messenger is also an important component in the delivery of the message. Children who are living with epilepsy were selected as the actors for the ABCs of Seizure Management PSA rather than using other types of messengers like a celebrity or expert. It was felt that this would be more emotionally involving and hence would increase relevance and success of the PSA for the child target audience.

The Thinking about Epilepsy in-class education program

The Thinking about Epilepsy program, the validated Thinking about Epilepsy survey and the

randomized controlled trial conducted to evaluate it are described elsewhere [23, 26]. Briefly, the Thinking about Epilepsy program was the first epilepsy education program in Canada to target elementary school children at school and be aligned with several of the existing school curriculum objectives. To impart its messages, the in-class program uses props, photographs, a puppet show, a role play and the epilepsy PSA. The program's development was informed by the existing literature regarding the public's knowledge and attitudes of epilepsy as well as those concepts deemed to be important by the WHO, ILAE, IBE, CEA as well as people with epilepsy and their families. The final program was then evaluated using a stratified cluster randomized control trial and demonstrated a significant increase in epilepsy knowledge and positive attitudes compared with the control group 1 month after delivery of the program [23]. This program is now used in several school boards in Canada and the United States, embedded in the Grade 5 science curriculum.

Study design

A sample of randomly selected Grade 5 classrooms (students aged 9–11 years old) from Southwestern Ontario, Canada, completed the Thinking about Epilepsy questionnaire including questions about the PSA.

After this questionnaire administration, some classrooms were randomly selected to receive an in-class Thinking about Epilepsy education program (a cluster randomized control trial embedded in a cohort) [23]. One month after the Thinking about Epilepsy education program, a follow-up questionnaire was delivered to all students. The evaluation of the Thinking about Epilepsy program provided an opportunity to evaluate the effect of the epilepsy PSA where those students who had seen the PSA constituted the exposed group and those who had not constituted the unexposed group in a retrospective cohort design.

Measurement tool

A previously published manuscript describes the development and psychometric properties of the

Thinking about Epilepsy questionnaire in detail [26]. In brief, a 33-item questionnaire was designed to assess Grade 5 (aged 9–11 years) students' knowledge of and attitudes about epilepsy before and after the in-class Thinking about Epilepsy education program as a method of evaluating the program. Since questions about the PSA were included to help understand whether outcomes observed should be attributed to the program or other exposures, the opportunity existed to also evaluate the impact of the PSA with the data collected. The questionnaire contains 18 knowledge, 10 attitude and 8 demographic questions. Two questions elicited information about the PSA 'Have you seen TV commercials about epilepsy?' (yes/no) 'If yes, how many times: 1–5 times, 6–10 times or more than 10 times'. The psychometric properties of the Thinking about Epilepsy questionnaire were ascertained using data from the Grade 5 students in this study [26]. Factor analysis of the questionnaire revealed a bidimensional structure (knowledge and attitudes) with five knowledge factors and two attitude factors. The knowledge items use true/false/don't know and multiple response options. The five knowledge factors measured were 'epilepsy (what it is, types and causes)', 'epilepsy (manifestation)', 'first aid', 'diagnosis and treatment' and 'role of the brain'. Attitude items use a 5-point Likert scale. The two attitude factors measured were 'contagiousness' and that 'epilepsy should not limit achievement'. Knowledge scores could range from 0 to 40 and the attitude scores could range from 8 to 40 with higher scores reflecting greater knowledge or more positive attitudes. In this sample, knowledge scores ranged from 9 to 38 and attitude scores ranged from 15 to 40. The questionnaire was found to have good internal consistency reliability (Cronbach's $\alpha = 0.74$ for knowledge and 0.82 for attitudes). The final 33-item Thinking about Epilepsy questionnaire demonstrates good reliability for the knowledge and attitude measures and excellent face, content and construct validity for both measures. The demographic questions collect information on school-level characteristics (type of school board, size of school and SES) as well as individual-level characteristics (gender, language spoken at home and familiarity with epilepsy).

SES was assessed at the school level using secondary education system data. School boards rank each school on SES by combining data from the Canadian Census and internally collected school board data on income, unemployment, lone-parent family status, education, immigration, mobility and school board-ranked literacy levels. Schools are ranked from high SES (1) to low SES (4). Questionnaires were distributed by an epilepsy educator from the local Epilepsy Support Centre to be self-administered by students in the classroom. The questionnaires took students about 30 min to complete.

Timeline

The PSA was developed in British Columbia, Canada, and then broadcast across Canada in 2000, 2001 and to the end of December 2002. First (baseline) questionnaires were completed by Grade 5 students in their classrooms between September 2003 and February 2004 and follow-up questionnaires were completed 1 month later. For the classrooms randomized to receive the Thinking about Epilepsy program, the program was delivered immediately following the first (baseline) questionnaire.

Data analysis

An analysis to determine whether viewing a PSA about epilepsy had any effect on epilepsy knowledge and attitudes was undertaken using a multivariable regression analysis with backward elimination with the main exposure of interest being whether the student had seen the PSA or not. Since the students had been recruited into the study by randomly selecting schools, this model was fit taking into account the correlated nature of the data by fitting a random effects parameter for school as well as including other covariates: gender, SES, school type and size, language spoken at home and familiarity with epilepsy. Analyses were also conducted to assess whether the number of times the PSA had been seen had any effects on the outcomes of knowledge and attitudes.

Similar multivariable regression analyses were also conducted on data collected 8 months after the

cessation of the PSA on TV for the same sample of students, half of whom had also been randomly selected to receive the Thinking about Epilepsy in-class education program about epilepsy. A dummy variable 'received in-class program' was entered into the regression equation to assess the effect of the PSA on knowledge and attitudes, if any, independent of the effects of the in-class Thinking about Epilepsy education program.

Results

The ABCs of Seizure Management PSA aired on several TV stations during 2000–02 inclusive across Canada, as well as in London, Ontario, where the evaluation took place. The PSA was aired in London, Ontario, on 25 stations in the year 2000, 6 stations in 2001 and 44 stations in 2002 [27]. These stations included CBC, CTV and Global as well as HGTV, the History Channel, Showcase and Discovery Health [27]. National airtime data were collected and demonstrated that the PSA was aired across Canada 507 times in 2000, 1111 times in 2001 and 2874 times in 2002 [27]. A snapshot report of airtime was available for London, Ontario, where the evaluation took place revealing the PSA was played 778 times between February 2002 and June 2002 [28]. The PSA aired in London, Ontario, to the end of December 2002 and the evaluation began in September 2003 in London, Ontario, schools.

Study sample

A total of 24 schools were randomly selected from the 37 consenting schools of the total 202 schools in the Southwestern Ontario target region who were asked to return a fax indicating their interest and consent to be randomized. All students in Grade 5 classes in these 24 schools completed the baseline questionnaire ($N = 803$). The questionnaires were completed in school batches depending on school availability between September 2003 and February 2004. Six students in the study sample indicated that they have epilepsy (1%). The

majority of students were from larger schools, with more than one Grade 5 classroom and were students in the public versus Catholic school board. The overall SES of students was equally distributed into the four categories used by the school board to measure SES. There were slightly more female students overall. A quarter of the sample indicated that they spoke a language other than English in the home, although all school instruction was in English (Table I).

Effects of the PSA on epilepsy knowledge and attitudes

Of the 803 students, 406 (51%) had seen the PSA, 273 of these students had seen the PSA 1–5 times, 67 had seen the PSA 6–10 times and 62 had seen the PSA more than 10 times (four students did not answer how many times they had seen the PSA); students who saw the PSA were more likely to have heard of epilepsy, know if they had epilepsy and be certain if they knew someone with epilepsy. Students who saw the PSA were less likely to report that they had seen a seizure before (Table I).

Those students who responded yes to the question 'I have seen a TV commercial about epilepsy' had significantly higher epilepsy knowledge overall ($P < 0.001$) (Table II). This higher knowledge was observed for all but two knowledge questions: 'the special doctor who looks after the brain is called ...' and 'doctors look at brain waves by ...' The students who reported that they had seen the PSA more often scored higher on their baseline knowledge about epilepsy than students who had seen the PSA less often ($P = 0.03$) (Table II). Seeing the PSA was also significantly related to positive attitudes about epilepsy ($P < 0.001$). However, unlike for knowledge, the frequency of viewing the PSA did not predict more positive attitudes about epilepsy ($P = 0.08$) (Table II).

Two multivariable regression models were run to investigate the effect of seeing the PSA (yes/no): one model for knowledge and one for attitudes as dependent variables. The final models are presented in Table III. Significant predictors of knowledge about epilepsy were having seen the PSA, language spoken at home (English) and familiarity with

Table I. Distribution of variables by students who saw the PSA compared with students who did not

Variable	Responses	Total N (column %)	Saw PSA (row %)	Did not see PSA (row %)	P value
School board	Public school board	500 (62)	248 (50)	252 (50)	0.51
	Catholic school board	303 (38)	158 (52)	145 (48)	
Size of school	Large	507 (63)	254 (50)	253 (50)	0.77
	Small	296 (37)	152 (51)	144 (49)	
SES of the school	1 (high SES)	216 (27)	103 (48)	113 (52)	0.47
	2	178 (22)	97 (54)	81 (46)	
	3	274 (34)	142 (52)	132 (48)	
	4 (low SES)	135 (17)	64 (47)	71 (53)	
Gender	Girls	438 (55)	225 (51)	213 (49)	0.62
	Boys	365 (45)	181 (50)	184 (50)	
Language	English	597 (74)	295 (49)	302 (51)	0.27
	Other	204 (26)	110 (54)	94 (46)	
Heard of epilepsy	No	120 (15)	20 (17)	100 (83)	<0.0001
	Yes	682 (85)	386 (56)	296 (44)	
Have epilepsy	No	652 (81)	358 (55)	294 (45)	<0.0001
	Yes	6 (1)	3 (50)	3 (50)	
	Don't know	142 (18)	44 (31)	98 (69)	
I know someone with epilepsy	No	571 (71)	253 (44)	318 (66)	<0.0001
	Yes	228 (29)	151 (66)	77 (34)	
I live with someone with epilepsy	No	356 (44)	193 (54)	163 (46)	0.04
	Yes	19 (2)	15 (79)	4 (21)	
There is someone in my extended family who has epilepsy	No	321 (40)	172 (54)	149 (46)	0.07
	Yes	54 (7)	36 (67)	18 (33)	
There is someone with epilepsy in my class	No	363 (45)	203 (56)	160 (44)	0.33
	Yes	12 (1)	5 (42)	7 (68)	
There is someone with epilepsy in my school	No	319 (40)	179 (56)	140 (44)	0.55
	Yes	56 (7)	29 (52)	27 (48)	
I know someone with epilepsy in another way	No	260 (32)	124 (48)	136 (52)	<0.0001
	Yes	115 (14)	84 (73)	31 (27)	
I have seen a seizure	No	401 (50)	265 (66)	136 (34)	<0.0001
	Yes	290 (36)	114 (39)	176 (61)	
	Don't know	111 (14)	26 (23)	85 (77)	

epilepsy (heard of epilepsy, have epilepsy and/or know someone with epilepsy). Significant predictors of attitudes about epilepsy were having seen the PSA, gender (female), language spoken at home and familiarity with epilepsy (having heard of epilepsy and/or knowing someone with epilepsy). For those who had seen the PSA, similar models were run to assess the effect of frequency of viewing the PSA. The number of times the PSA was viewed was not predictive of knowledge or attitudes after taking into account other covariates (gender, SES, school type and size, language spoken at home and familiarity with epilepsy).

Effects of the PSA after an in-class epilepsy education program

A secondary objective of this study was to assess the effects, if any, of the PSA after the in-class Thinking about Epilepsy education program on the outcomes of knowledge and positive attitudes about epilepsy (Table IV). From the total sample, 403 students were randomly allocated by classroom clusters to the arm that received epilepsy education via the Thinking about Epilepsy in-class program. The remaining students were allocated to a delayed intervention control arm.

The models depicted in Table IV include the full sample with the variable 'received in-class

program' to control for the effect of the education program to test for the effect of the PSA independent of the education program. The PSA remained in the model after backward elimination as a significant predictor of knowledge improvement about epilepsy ($P = 0.001$) independent of the effect of participating in the in-class epilepsy education program. The variables baseline knowledge score, school type (Catholic), SES (high) and familiarity with epilepsy (heard of epilepsy and knowing

someone with epilepsy) also remained in this model as significant predictors of epilepsy knowledge. Having seen the PSA also significantly predicted positive attitudes about epilepsy, independent of the effect of participating in the in-class education program. The other significant predictors of positive attitude about epilepsy were baseline attitude score, gender (female), language spoken at home (English) and familiarity with epilepsy (having heard of epilepsy and knowing someone with epilepsy).

Table II. Mean knowledge and attitude score and exposure to PSA about epilepsy

Variable	PSA		Number of times		
	No	Yes	1–5 times	6–10 times	>10
<i>N</i>	397	406	273	67	62
Knowledge					
Mean ^a	24.3	26.2	26.7	28.2	26.6
SD	5.1	5.3	5.2	5.7	5.1
<i>P</i>	<0.001		0.03		
Attitudes					
Mean ^a	30.3	33.0	32.5	34.9	33.4
SD	6.7	6.6	6.3	6.8	7.7
<i>P</i>	<0.001		0.08		

^aA higher score indicates increased knowledge or more positive attitudes about epilepsy.

Table III. Final models of predictors of knowledge and attitudes about epilepsy

	Variable	Standardized coefficient	<i>t</i>	<i>P</i> value
Knowledge ^a	Saw PSA	0.10	2.85	0.004
	Language spoken at home	0.07	2.14	0.032
	Heard of epilepsy	0.14	2.64	<0.0001
	Have epilepsy	0.09	2.51	0.012
	Know someone with epilepsy	0.11	2.98	0.003
Attitude ^b	Saw PSA	0.12	3.35	0.001
	Gender	0.18	5.14	<0.0001
	Language spoken at home	0.11	3.35	0.001
	Heard of epilepsy	0.19	5.64	<0.0001
	Know someone with epilepsy	0.18	5.41	<0.0001

^aVariables removed from the model by backward elimination: SES ($P = 0.43$), gender ($P = 0.37$), school type ($P = 0.49$) and school size ($P = 0.29$).

^bVariables removed from the model by backward elimination: school size ($P = 0.97$), SES ($P = 0.60$), have epilepsy ($P = 0.13$) and school type ($P = 0.12$).

Conclusions

Summary of findings

This manuscript describes the ABCs of Epilepsy Management PSA, the proportion of Grade 5 students surveyed who had seen the PSA and the evaluation of the effects of the PSA on knowledge and positive attitudes about epilepsy in a Grade 5 student population. Children who had seen the PSA were more likely to have higher knowledge and positive attitudes about epilepsy. This held true even in multivariable models controlling for several possible confounders (gender, SES, school type and size, language spoken at home and familiarity with epilepsy). Having seen the PSA also had a positive effect on the outcomes of epilepsy knowledge and

Table IV. Final model of predictors of knowledge and attitudes after the PSA and in-class education program

	Variable	Standardized coefficient	<i>t</i>	<i>P</i> value
Knowledge ^a	Saw PSA	0.07	3.29	0.001
	Baseline knowledge score	0.34	16.93	<0.0001
	Received in-class program	0.67	32.83	<0.0001
	School type	0.05	2.76	0.006
	SES	0.04	2.05	0.04
	Heard of epilepsy	0.11	5.31	<0.0001
	Know someone with epilepsy	0.04	1.91	0.06
Attitudes ^b	Saw PSA	0.05	2.01	0.05
	Baseline attitude score	0.51	20.71	<0.0001
	Received in-class program	0.44	18.38	<0.0001
	Gender	0.07	2.27	0.03
	Language spoken at home	0.07	2.63	0.009
	Heard of epilepsy	0.06	2.67	0.008
	Know someone with epilepsy	0.05	2.65	0.008

^aVariables removed from the model by backward elimination: language spoken at home ($P = 0.73$), have epilepsy ($P = 0.30$), school size ($P = 0.31$) and gender ($P = 0.13$).

^bVariables removed from the model by backward elimination: school type ($P = 0.52$), school size ($P = 0.58$), SES ($P = 0.18$) and have epilepsy ($P = 0.11$).

positive attitudes, independent of the effect that the in-class Thinking about Epilepsy program had.

The findings here support what was previously known that PSAs can have an effect on knowledge [29–32] and occasionally an effect on attitudes [12, 33] and behavioral intent [34–37], but this is the first study to investigate this in the context of epilepsy. These improvements in knowledge and positive attitudes about epilepsy following the PSA meet the need to educate society about epilepsy. The specific improvements in seizure first aid knowledge gained from this PSA also meet the need, highlighted by individuals with epilepsy, to improve community members' knowledge about what to do when they see someone having a seizure. Last, improved knowledge and positive attitudes about epilepsy—through our understanding of the Theory of Planned Behavior—are likely to increase positive behaviors toward people with epilepsy and ultimately to reduce stigma about seizures.

Strengths and weaknesses

This is the first study to evaluate the effect of a PSA targeted toward school children and aired on TV about epilepsy and does so using a random sample of Grade 5 students. This study provides pragmatic outcomes including who was most likely to view

the PSA as well as knowledge and attitudes about epilepsy for those who saw the PSA compared with those who had not. This study was strengthened by its use of a reliable and valid measurement tool and its ability to take into account several important school and individual-level covariates, such as SES and gender. There is evidence to suggest that Grade 5 students, unlike younger children, are likely to have accurate memories about the PSA, how many times they viewed it as well as its content [38, 39]. Previous research has also demonstrated that in this age group (10- and 11-year olds), recall from video is as accurate as recall from actual events [40].

This study had several limitations. To begin, the channels that aired the PSA did so as a community service. However, even if this limited the amount of airtime the PSA obtained, it would not have limited its effectiveness for the children who viewed it. Second, using a cohort design to evaluate an intervention such as a PSA has inherent weaknesses. Cohort designs are not ideal for the evaluation of interventions since there is no randomization of study participants (e.g. to receive the PSA versus not) and hence, these study designs are more vulnerable to bias. In this study, it is possible that those students who saw the PSA were systematically

different than those who did not view the PSA and that those differences (rather than the PSA) are related to their knowledge and positive attitudes about epilepsy. The value of the present study is in understanding the proportion of children who viewed the PSA in the community and is suggestive of an effect of the PSA on epilepsy knowledge and attitudes. Although the cohort design used cannot determine for certain if the PSA led to the changes observed, there are several indications that it is the PSA having an effect (rather than underlying differences between exposed and unexposed groups). For instance, significant differences were observed on familiarity with epilepsy, epilepsy knowledge and attitudes for those who saw the PSA compared with those who did not, but there were not significant differences between these two groups on school type or size, SES, gender or language spoken at home. As well, those students who saw the PSA were less likely to answer 'don't know' to questions about familiarity with epilepsy and last, having seen the PSA remains in the multivariable models which also take into account familiarity with epilepsy. Ideally, in future, a cluster randomized trial using a factorial design where entire communities are randomized would be the recommended method for assessing the independent and combined effects of the ABCs of Seizure Management PSA and the Thinking about Epilepsy in-class education program on epilepsy knowledge and attitudes. That said, the cohort study design used is valuable in that it demonstrates the pragmatic (or 'real-life') outcomes of a widely televised PSA with respect to who was likely to see the PSA and whether viewing the PSA was correlated with increased epilepsy knowledge and positive attitudes.

Extension of findings to other populations

The sample population in this study, randomly drawn from schools within the London Census Metropolitan Area with a population of around 400 000, mirrors that of the total Ontario population with respect to several variables including SES (in this study, this was based on income, education level of parents, lone parent, immigration, mobility and literacy level). As well, the study sample's

previous experience with epilepsy is in line with findings from other studies conducted in different locations and provides reassurance as to the representativeness of the sample studied and therefore the feasibility of generalizing the study results to other populations [23]. When asked if they had epilepsy, six students (1%) in this study indicated yes. This mirrors the 0.6% Ontario prevalence of self-reported epilepsy [5] as well as the international rates cited by the WHO of between 0.8 and 1% [3]. When asked if they had ever seen a seizure, in this study, 276 (35%) said yes and 193 (25%) reported that they were not sure. Studies in the literature report a range of 34–72% for those who have seen a seizure [23].

Future programming, research and implications for practitioners

Many practitioners in the field recognize that perpetual campaigning about epilepsy is necessary because there are always newcomers to knowledge about epilepsy as well as those people who are gradually adopting new knowledge and positive attitudes about epilepsy but who need reminders [18]. TV PSAs are a practical way to impart new information and foster positive attitudes about epilepsy since PSAs can have wide reach, are likely to attract attention and do not rely on active mental engagement to deliver the message [18]. They can also be a cost-effective way to reach a large audience with a clear message about epilepsy. Disseminating information about epilepsy in the media can be achieved by working with government, industry or non-governmental organizations to obtain media slots, free PSA space, submitting press releases to journalists and posting information on the Internet. As well, the relatively new practice of embedding health-related material in entertainment programming has become common in developing countries and may be a useful vehicle for dissemination of information about epilepsy in both developed and developing country settings [41, 42].

Future research should continue to investigate the use of media in disseminating information and garnering positive attention about epilepsy for children as well as adults. This might include the

evaluation of conventional and unconventional publicity around epilepsy including placing guests on talk shows, featuring compelling stories in specialty magazines, staging events that attract journalist attention and putting epilepsy on the agenda of government officials.

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Conflict of interest statement

None declared.

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