



# Understanding of and misunderstandings regarding epilepsy: A survey of teachers in schools for special needs education in Japan

Yuri Narita <sup>a,\*</sup>, Shin-ichiro Hamano <sup>b</sup>

<sup>a</sup> Division of Psychology, Center for Child Health and Human Development, Saitama Children's Medical Center, Saitama, Japan

<sup>b</sup> Division of Neurology, Saitama Children's Medical Center, Saitama, Japan

## ARTICLE INFO

### Article history:

Received 30 January 2019

Revised 14 April 2019

Accepted 14 April 2019

Available online 28 May 2019

### Keywords:

Epilepsy  
Special needs education  
Attitude  
Japanese school teacher  
Survey  
Prejudice

## ABSTRACT

The present study surveyed the understanding of epilepsy and attitudes toward epilepsy among teachers in Japanese schools for special needs education. An adapted version of a self-reported questionnaire, consisting of 27 questions, was sent to 3474 teachers at all schools for special needs education in Saitama Prefecture. The response rate to the questionnaire was 62%, corresponding to 2109 valid responses. The responses to three basic questions were as follows: 99% had heard about “epilepsy”, 90% had seen epileptic seizures, and 63% had an acquaintance who had epilepsy. Numerous questionnaire items gave low correct answer rates for knowledge- and attitude-related questions. Correct responses to knowledge questions and a positive attitude toward epilepsy were associated with whether individuals had acquaintance with epilepsy, experience seeing a seizure, and read or heard about epilepsy. There was skepticism and uncertainty about whether people with epilepsy should be allowed to drive, likely due to vague fears of the risks of driving with epilepsy. According to our results, knowledge about epilepsy does not necessarily lead to a positive attitude. However, respondents who had acquaintances with epilepsy were most likely to demonstrate a positive attitude. Thus, familiarity is an essential factor in the likelihood of having a positive attitude toward epilepsy. Therefore, it is essential for teachers to understand how to manage and respond to epilepsy. There were a variety of concerns related to people with epilepsy driving. This finding highlights the importance of disseminating correct information on the risks of driving with epilepsy.

© 2019 Elsevier Inc. All rights reserved.

## 1. Introduction

Epilepsy is a common disorder that affects about one million people in Japan. Nevertheless, many people are prejudiced against individuals with the disease. A number of investigations of knowledge about and attitudes toward epilepsy have been conducted in various countries, including Hong Kong [1], Kuwait [2], Korea [3], USA [4], and France [5]. However, there are differences in the level of awareness with respect to epilepsy in each country, as well as differences related to age, gender, education, culture, and other factors; the differences according to the world regions and according to the income groups of countries have been reported in detail by World Health Organization (WHO) [6].

In addition, the investigations for teachers have been conducted in various countries, including Korea [7,8], Italy [9], Saudi Arabia [10,11], and a systematic review [12]. Children spend almost as much time at school, away from their primary caretakers, as they do at home. Particularly, for the care of children attending the schools for special needs education, complications due to epilepsy have to be additionally

considered. Therefore, it is important to understand the level of knowledge and the attitude of teachers toward epilepsy. For these reasons, we conducted a survey analysis of the understanding and attitude toward epilepsy of teachers in Japanese schools for special needs education.

## 2. Methods

We used a self-reported questionnaire, partially modified from a previous study published by Awad et al. [2], consisting of 27 questions with yes/no or yes/no/don't know/cannot say answers. The survey was supplemented with open questions answered anonymously. For questions testing knowledge, the correct answer rate was calculated for each item. For questions assessing attitude, the positive answer rate was calculated for each item. The questionnaire was provided in 2014 to 3474 teachers at all schools for special needs education in Saitama Prefecture. The questionnaire contained an introductory statement about the purpose and method of the study. If consent for participation was not provided, the questionnaire was not included in the study.

Statistical analysis was performed using Statistical Package for Social Science (SPSS). Chi-square tests were used to assess differences in categorical variables. We report on bivariate analyses of 3 basic questions

\* Corresponding author at: Division of Psychology, Center for Child Health and Human Development, Saitama Children's Medical Center, 1-2 Shintoshin, Chuo-ku, Saitama-shi, Saitama 330-8777, Japan.

E-mail address: [narita.yuri@scmc.pref.saitama.jp](mailto:narita.yuri@scmc.pref.saitama.jp) (Y. Narita).

and knowledge and attitudes questions using a p value cutoff of 0.05 for statistical significance (Tables 1–3).

The survey was approved by the ethics committees of Saitama Children's Medical Center in 2013.

### 3. Results

#### 3.1. Respondents and basic questions

The response rate to the questionnaire was 62%. The number of valid forms returned was 2109. Of the responders, 897 were males and 1212 were females. The ages varied from individuals in their twenties to individuals in their sixties: twenties, 28%; thirties, 18%; forties, 20%; fifties, 32%; sixties, 2%. The responses to the 3 basic questions were as follows: "Have you ever heard and/or seen information about epilepsy?": yes, 99%; "Have you ever seen an epileptic seizure?": yes, 90%; "Do you have any acquaintance who has epilepsy?": yes, 63% (Table 1).

#### 3.2. Knowledge of epilepsy

Fig. 1 presents the responses to yes/statements assessing knowledge of epilepsy. For statements Q9 (evil spirit), Q7 (infectious disease), Q6 (psychiatric disorder), Q5 (cranial nerve disease), Q10 (all epileptic fits will present with symptoms of generalized tonic-clonic seizure), and Q21 (low intellectual ability), the correct response rate was over 80%. For the answers to statements Q22 (causes of epilepsy are related to the lengthy use of a personal computer (PC)), Q4 (genetic disease), Q11 (you should put things in the mouth of an individual having a seizure), Q8 (incurable disease), and Q12 (the only method of treatment is medication), less than 60% of the responses were correct.

We further examined the following statements that had high error rates: Q11 (you should put things in the mouth of an individual having a seizure) and Q12 (the only method of treatment is medication). For the first statement (Q11), 56% provided the correct response. Respondents who had seen or heard about epilepsy, had seen epileptic seizure(s), and/or people who had acquaintances with epilepsy had a higher tendency to answer correctly than those who did not ( $p < 0.001$ ). On the other hand, people who had not seen or heard about epilepsy, had not seen epileptic seizure(s), and/or people who did not have any acquaintances with epilepsy had a higher error rate than those who did ( $p < 0.001$ ). For the second statement (Q12), 40% responded correctly. Among these respondents, people who had seen or heard about epilepsy, had seen someone having a seizure, and/or had acquaintances with epilepsy had a higher rate of correct responses compared with people who did not have any experiences with seizures or knew someone with epilepsy ( $p < 0.0001$ ,  $p < 0.0001$ , and  $p = 0.013$ , respectively). On the other hand, the percentage of incorrect answers was high (16%). People who had not

seen or heard about epilepsy, had not seen epileptic seizure(s), and/or people who did not have any acquaintances with epilepsy had a significant propensity to answer "don't know" ( $p < 0.0001$ ,  $p < 0.0001$ , and  $p = 0.013$ , respectively).

Table 2 summarizes the results of the knowledge questionnaire, organized by category. The categories of people with the highest percentage of correct responses were women in their forties and fifties, people who had seen or heard about epilepsy, people who had seen seizures, and people who had acquaintances with epilepsy.

#### 3.3. Attitudes toward epilepsy

The results for questions regarding attitude toward epilepsy are shown in Fig. 2.

We more carefully examined two statements representing attitudes toward epilepsy for which the positive percentage was low and the negative percentage was high: Q16 (I would not allow my child to marry someone who has epilepsy) and Q20 (children with epilepsy require special education). The responses to statement Q16 were 62% positive. Among respondents, the percentage of individuals responding positively to Q16 was higher among individuals with an acquaintance with epilepsy ( $p = 0.003$ ). On the other hand, among respondents who did not have an acquaintance with epilepsy, there was a significantly higher likelihood of answering "don't know" ( $p = 0.003$ ). Seventy-two percent answered positively to statement Q20. The percentage of those who answered positively was higher in the group of people who had seen or heard about epilepsy, had seen someone having a seizure, and/or had acquaintances with epilepsy compared with those that did not ( $p < 0.001$ ,  $p < 0.001$ , and  $p = 0.001$ , respectively). On the other hand, among respondents who answered negatively, the percentage of people who had never seen or heard about epilepsy or seen someone having a seizure was significantly higher ( $p < 0.001$ ).

To summarize Table 3, the category of people with the highest percentage of positive responses were those with acquaintances who had epilepsy. On the other hand, negative responses to people with epilepsy marrying their child were higher for people in their sixties while negative responses to the requirement of special education were higher for people in their twenties who had never seen a seizure and do not know anybody with epilepsy.

#### 3.4. Attitudes toward people with epilepsy having driving licenses

The number of news reports about traffic accidents caused by people with epilepsy has increased in recent years in Japan. As a result, there is public concern about people with epilepsy driving. To assess this, we investigated attitudes toward people with epilepsy having driving licenses.

In response to question Q24 (Do you think people who have epilepsy should not drive a car?), 13% answered "yes", 31% answered "no", 15% answered "don't know", and 41% answered "cannot say". People who had heard about epilepsy or read about it were more likely to answer "cannot say" while people who had not heard about epilepsy or read about it were more likely to answer "yes" or "don't know" ( $p < 0.001$ ). In response to question Q26 (Do you think if people who have epilepsy and did not report their disease caused a traffic accident, they should be punished more severely than drunk drivers?), 13% answered "yes", 29% answered "no", 23% answered "don't know", and 35% responded "cannot say". People who had acquaintances with epilepsy were more likely to answer "no" while people without acquaintances with epilepsy more frequently answered "yes" ( $p = 0.008$ ).

To question Q27 (If you see someone who got a driving license without reporting their disease, you should report it to a policeman?), 53% answered "yes", 8% answered "no", 19% answered "don't know", and 20% answered "can't say". We then asked Q27 (If you answered that someone should report, who should report?). The largest numbers of answers, in order with multiple responses allowed, were as follows:

**Table 1**  
Basic questions.

	Q1	Q2	Q3
	Yes (%)	Yes (%)	Yes (%)
Total	98.7%	90.2%	62.7%
Gender			
Male	98.2%	90.2%	58.9%
Female	99.1%	90.3%	65.6%
Age			
20s	97.9%	79.1%	58.6%
30s	98.9%	91.7%	59.7%
40s	98.3%	93.0%	68.3%
50s	99.4%	96.9%	64.4%
60s	100.0%	94.3%	64.2%

Q1: Have you ever heard and/or seen about epilepsy?, Q2: Have you ever seen an epileptic seizure?, and Q3: Do you have any acquaintance who has epilepsy?

**Table 2**  
Epilepsy knowledge questions.

	Correct response rate															
	Total	Gender			Age					Basic question						
		Male	Female	p value	20s	30s	40s	50s	60s	p value	Q1 Yes	p value	Q2 Yes	p value	Q3 Yes	p value
Q4	57%	52%	60%	<0.000 <sup>a</sup>	50%	56%	58%	62%	63%	<0.000 <sup>a</sup>	57%	<0.000 <sup>a</sup>	59%	<0.000 <sup>a</sup>	60%	<0.000 <sup>a</sup>
Q5	81%	78%	84%	<0.008 <sup>a</sup>	69%	82%	85%	88%	94%	<0.000 <sup>a</sup>	82%	<0.000 <sup>a</sup>	84%	<0.000 <sup>a</sup>	84%	<0.001 <sup>a</sup>
Q6	84%	79%	87%	<0.000 <sup>a</sup>	72%	83%	87%	92%	83%	<0.000 <sup>a</sup>	84%	<0.000 <sup>a</sup>	86%	<0.000 <sup>a</sup>	86%	<0.003 <sup>a</sup>
Q7	96%	94%	97%	<0.002 <sup>a</sup>	92%	97%	96%	97%	96%	<0.004 <sup>a</sup>	96%	<0.000 <sup>a</sup>	97%	<0.000 <sup>a</sup>	96%	<0.012 <sup>a</sup>
Q8	55%	53%	56%	<0.007 <sup>a</sup>	42%	54%	54%	66%	66%	<0.000 <sup>a</sup>	55%	<0.000 <sup>a</sup>	57%	<0.000 <sup>a</sup>	56%	<0.000 <sup>a</sup>
Q9	97%	96%	98%	<0.002 <sup>a</sup>	96%	97%	98%	99%	96%	<0.041 <sup>a</sup>	98%	<0.000 <sup>a</sup>	98%	<0.000 <sup>a</sup>	98%	<0.800
Q10	81%	77%	83%	<0.000 <sup>a</sup>	73%	82%	82%	86%	77%	<0.000 <sup>a</sup>	81%	<0.000 <sup>a</sup>	83%	<0.000 <sup>a</sup>	83%	<0.001 <sup>a</sup>
Q11	56%	48%	62%	<0.000 <sup>a</sup>	44%	56%	60%	62%	57%	<0.000 <sup>a</sup>	56%	<0.000 <sup>a</sup>	59%	<0.000 <sup>a</sup>	59%	<0.000 <sup>a</sup>
Q12	40%	39%	42%	<0.381	33%	42%	42%	45%	34%	<0.000 <sup>a</sup>	41%	<0.000 <sup>a</sup>	42%	<0.000 <sup>a</sup>	43%	<0.013 <sup>a</sup>
Q21	79%	78%	80%	<0.002 <sup>a</sup>	72%	77%	84%	85%	77%	<0.000 <sup>a</sup>	80%	<0.000 <sup>a</sup>	81%	<0.000 <sup>a</sup>	81%	<0.006 <sup>a</sup>
Q22	60%	58%	61%	<0.401	49%	58%	67%	65%	73%	<0.000 <sup>a</sup>	60%	<0.000 <sup>a</sup>	61%	<0.000 <sup>a</sup>	61%	<0.137

Q4: Is epilepsy a genetic disease?, Q5: Is epilepsy a cranial nerve disease?, Q6: Is epilepsy a kind of psychiatric disorder?, Q7: Is epilepsy infectious?, Q8: Is epilepsy an incurable disease?, Q9: Is epilepsy a condition in which the individual is possessed by an evil spirit?, Q10: Will all epileptic fits present with symptoms of generalized tonic-clonic seizure?, Q11: When seizure occurs, should you put things in the patient's mouth, Q12: Is treatment with medication the only way to manage epilepsy?, Q21: Generally, is the IQ of persons with epilepsy lower than that of the normal population?, and Q22: Is a cause of epilepsy the lengthy use of a PC?

<sup>a</sup> Denotes statistical significance with  $p < 0.05$ .

“Everyone who knows about it” (n = 453), “Family” (n = 361), “Their doctor” (n = 194), “Their nurse” (n = 55), “People who are in school or colleagues with them” (n = 57), and “Neighbor” (n = 24).

**4. Discussion**

This survey-based study revealed areas where knowledge of and attitudes toward epilepsy are lacking, as well as areas where there is a good level of understanding in Japanese school teachers. It also identified demographic factors that are associated with a good level of knowledge and positive attitude toward epilepsy. In this survey, the rate of correct answers was particularly low (under 60%) for “it is a genetic disease”, “the patient should have something put inside their mouth”, “it is an incurable disease”, and “the only treatment is medication”. These results are in line with those of studies conducted in Hong Kong [1], Kuwait [2], Korea [3,7], USA [4], and France [5], which showed a similar misunderstanding of epilepsy being a genetic disease and incurable disease, and that the patient should have something put inside their mouth, etc.

As in the surveys conducted in other countries [1–5,7,11,12], negative attitudes were also related to demographic and personal variables. The following categories of respondents demonstrated a positive attitude toward epilepsy and submitted the correct response more frequently than other respondents: women, people who had seen and

heard about epilepsy, people who had seen seizures, and people who had acquaintances with epilepsy.

However, we found that knowledge about epilepsy does not necessarily lead to a positive attitude, like what was stated that there are sufficient gaps in knowledge and a significant degree of negative attitudes among teachers to warrant concern in a systematic review [12]. Respondents who had acquaintances who had seizures were most likely to demonstrate a positive attitude. Thus, an important factor leading to positive attitude may be familiarity with people with epilepsy.

For example, a survey of teachers in Korea revealed 90.2% positive response rates to “They can do well academically” and 92.0% to “They can be taught in a normal class”, demonstrating a positive attitude [7]. However, 43% of teachers reacted negatively to the possibility of “Having epileptic children in their class.” The reason for this is that teachers fear that the child may have seizures in their classroom, and they will not know what to do. An Italian survey of teachers showed that only 9% of teachers administer medication to children when they have a seizure [9]. Instead, 45% of teachers said that they would call an ambulance, and they did not have sufficient knowledge of the appropriate first aid.

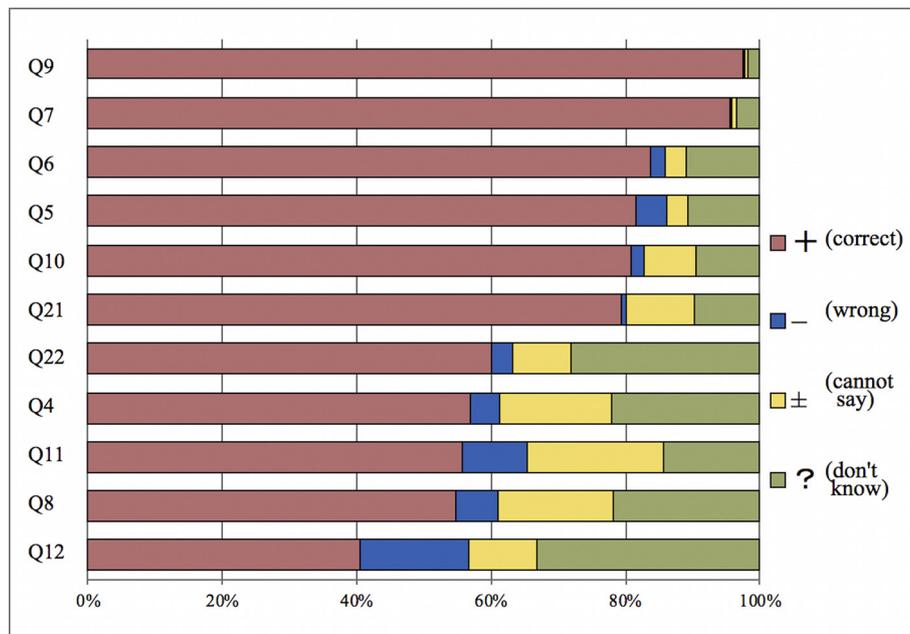
The reason for not willing to administer medicines was the fear of legal consequences in case of an accident. The Korean survey indicated that teachers who had the appropriate knowledge and familiarity with epilepsy gave positive answers. Therefore, it is essential for teachers

**Table 3**  
Epilepsy attitude questions.

	Positive response rate															
	Total	Gender			Age					Basic question						
		Male	Female	p value	20s	30s	40s	50s	60s	p value	Q1 Yes	p value	Q2 Yes	p value	Q3 Yes	p value
Q13	94%	92%	96%	<0.003 <sup>a</sup>	93%	94%	96%	95%	85%	<0.010 <sup>a</sup>	94%	<0.001 <sup>a</sup>	95%	<0.000 <sup>a</sup>	96%	<0.000 <sup>a</sup>
Q14	93%	92%	94%	<0.233	90%	93%	94%	95%	91%	<0.254	93%	<0.000 <sup>a</sup>	93%	<0.000 <sup>a</sup>	94%	<0.000 <sup>a</sup>
Q15	95%	94%	96%	<0.290	94%	96%	97%	97%	94%	<0.508	96%	<0.000 <sup>a</sup>	96%	<0.000 <sup>a</sup>	97%	<0.002 <sup>a</sup>
Q16	62%	63%	61%	<0.135	65%	64%	60%	59%	51%	<0.001 <sup>a</sup>	62%	<0.675	62%	<0.479	65%	<0.003 <sup>a</sup>
Q17	73%	72%	74%	<0.393	75%	78%	74%	69%	65%	<0.006 <sup>a</sup>	74%	<0.053	74%	<0.001 <sup>a</sup>	75%	<0.003 <sup>a</sup>
Q18	65%	66%	64%	<0.458	64%	58%	65%	68%	63%	<0.056	65%	<0.019 <sup>a</sup>	65%	<0.752	64%	<0.208
Q19	90%	88%	92%	<0.035 <sup>a</sup>	91%	91%	91%	88%	92%	<0.614	90%	<0.094	91%	<0.068	92%	<0.047 <sup>a</sup>
Q20	72%	69%	74%	<0.058	58%	71%	79%	80%	79%	<0.000 <sup>a</sup>	73%	<0.000 <sup>a</sup>	74%	<0.000 <sup>a</sup>	75%	<0.001 <sup>a</sup>
Q23	91%	89%	93%	<0.017 <sup>a</sup>	88%	93%	92%	92%	90%	<0.013 <sup>a</sup>	92%	<0.000 <sup>a</sup>	92%	<0.000 <sup>a</sup>	93%	<0.000 <sup>a</sup>

Q13: Do you think that women with epilepsy should marry?, Q14: Do you think that women with epilepsy should have their own children?, Q15: Would you be against your child playing with a child who has epilepsy?, Q16: Would you object to your child marrying a person with epilepsy?, Q17: If one of your family members had epilepsy, would you keep that a secret from others?, Q18: If you are an employer, would you fire an employee with epilepsy, if s/he has a seizure at work because of unreported epilepsy?, Q19: If you observe a seizure, would you help someone with epilepsy?, Q20: Generally, should epileptic children study in a special needs education class rather than a regular class?, and Q23: Do you think that persons with epilepsy are dangerous persons?

<sup>a</sup> Denotes statistical significance with  $p < 0.05$ .



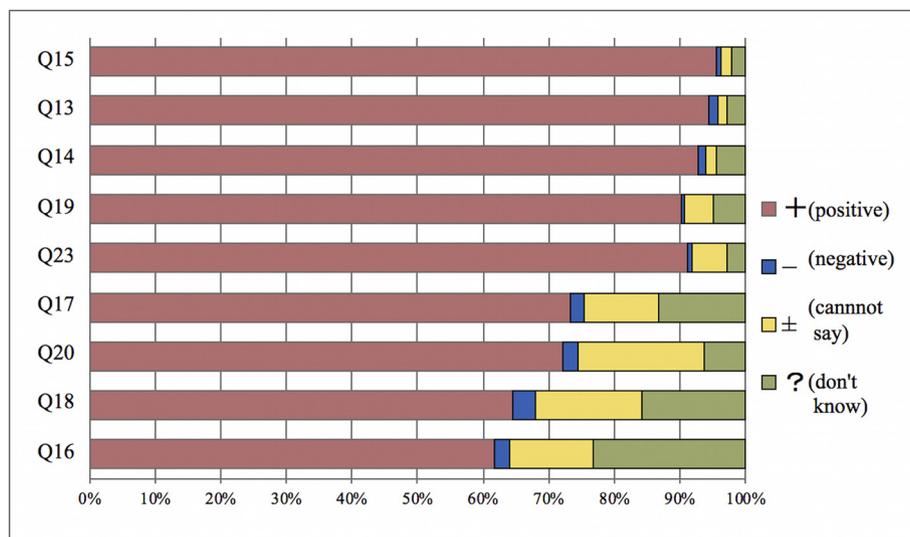
**Fig. 1.** Responses to epilepsy knowledge questions. Q9: Is epilepsy a condition in which the individual is possessed by an evil spirit? Q7: Is epilepsy infectious? Q6: Is epilepsy a kind of psychiatric disorder? Q5: Is epilepsy a cranial nerve disease? Q10: Will all epileptic fits present with symptoms of generalized tonic–clonic seizure? Q21: Generally, is the IQ of persons with epilepsy lower than those of normal population? Q22: Is a cause of epilepsy the lengthy use of a PC? Q4: Is epilepsy a genetic disease? Q11: When seizure occurs, should you put things in the patient's mouth? Q8: Is epilepsy an incurable disease? Q12: Is treatment with medication the only way to manage epilepsy?

of children with epilepsy to know how to manage the disorder and respond to seizures and legal issues.

Familiarity and knowledge also influence attitudes toward people with epilepsy driving. The Japanese road and traffic laws were changed in June 2002 to allow people who have epilepsy to be conditionally granted a driving license. A partial revision of the road traffic law was enforced in June 2014 with the requirement that “doctors are able to report cases of certain disease to the public safety commission when they find out that these patients have obtained driving licenses illegally”. When individuals have limited knowledge of epilepsy or have no

acquaintance with epilepsy, they tend to answer that people with epilepsy should not drive cars and that they should receive severe penalties if they do so. Since people generally do not know the specific risks associated with people with epilepsy driving, these individuals are likely to foster an unspecified fear of it. There are a variety of specific problems associated with people with epilepsy driving [13–15]. Therefore, it is important to disseminate correct information in order to arrive at the most appropriate attitudes and policies.

In Japan, less education is imparted to teachers about diseases including epilepsy, although the education level is higher for the



**Fig. 2.** Responses to epilepsy attitude questions. Q15: Would you be against your child playing with a child who has epilepsy? Q13: Do you think that women with epilepsy should marry? Q14: Do you think that women with epilepsy should have their own children? Q19: If you observe a seizure, would you help someone with epilepsy? Q23: Do you think that persons with epilepsy are dangerous persons? Q17: If one of your family members had epilepsy, would you keep that a secret from others? Q20: Generally, should epileptic children study in a special needs education class rather than a regular class? Q18: If you are an employer, would you fire an employee with epilepsy, if s/he has a seizure at work because of unreported epilepsy? Q16: Would you object to your child marrying a person with epilepsy?

developmental disabilities. At our center, we have been conducting lectures on epilepsy for patient families, teachers, and staff of welfare facilities for more than 20 years. However, because the attendance of teachers is low, in the future, spreading epilepsy education is necessary in Japan.

In some countries including India [16], Nigeria [17], Italy [18], and Germany [19], intervention training for teachers has been conducted and the effects have been confirmed. The Japan Epilepsy Society and Japan Epilepsy Association have also initiated intervention training in various parts of Japan. We hope that this intervention training spreads to include teachers.

### 5. Significance and limitations

We surveyed the extent of understanding of epilepsy and attitudes toward epilepsy of teachers in Japanese schools for special needs education. The greatest strength of this study is that it is the largest survey of teachers in this population. We investigated not only knowledge of epilepsy and attitudes toward epilepsy, but also attitudes toward people with epilepsy having driving licenses. On the other hand, we could only include teachers in Saitama's schools for special needs education and not teachers in regular schools and those in other geographical areas. An interview of the teachers, rather than the administration of questionnaires, may have yielded different opinions.

In conclusion, more educational interventions and programs are needed to increase public familiarity with epilepsy and, thereby, reduce incorrect concepts about epilepsy and negative attitudes toward it.

### Acknowledgments

We wish to thank Mr. Kazuhisa Udagawa and the special education section of Saitama Education Bureau for their support of this survey.

### Funding

This study was supported by a grant-in-aid for Research on Measures for Intractable Diseases from the Ministry of Health, Labour and Welfare, Japan No. H29-Nanchi-Ippan-10.

### Disclosure of conflicts of interest

None of the authors has any conflict of interest to disclose.

### References

- [1] Fong CG, Hung A. Public awareness, attitude, and understanding of epilepsy in Hong Kong special administrative region, China. *Epilepsia* 2002;43:311–6.
- [2] Awad A, Sarkhoo F. Public knowledge and attitudes toward epilepsy in Kuwait. *Epilepsia* 2008;49:564–72.
- [3] Yoo JK, Jung KY, Park KW, Lee DH, Lee SK, Lee IK, et al. Familiarity with, understanding of, and attitudes toward epilepsy among people with epilepsy and healthy controls in South Korea. *Epilepsy Behav* 2009;16:260–7.
- [4] Chung K, Ivey SL, Guo W, Chung K, Nguyen C, Nguyen C, et al. Knowledge, attitudes, and practice toward epilepsy (KAPE): a survey of Chinese and Vietnamese adults in the United States. *Epilepsy Behav* 2010;17:221–7.
- [5] Rafael F, Dubreuil CM, Burbaud F, Tran DS, Clement JP, Preux PM, et al. Knowledge of epilepsy in the general population based on two French cities: implications for stigma. *Epilepsy Behav* 2010;17:82–6.
- [6] WHO. International League Against Epilepsy, International Bureau for Epilepsy. Atlas: Epilepsy Care in the World; 2005.
- [7] Lee H, Lee SK, Chung CK, Yun SN, Choi-Kwon S. Familiarity with, knowledge of, and attitudes toward epilepsy among teachers in Korean elementary schools. *Epilepsy Behav* 2010;17:183–7.
- [8] Lee S-A, Yim SB, Rho YI, Chu M, Park HM, Lee G, et al. Factors contributing to Korean teachers' attitudes toward students with epilepsy. *Epilepsy Behav* 2011;20:378–81.
- [9] Savarese G, Carpinelli L, D'Elia D, Coppola G. Teachers of various school grades and representations of epilepsy: problems, relational aspects and perspectives of life quality. *Ital J Pediatr* 2015;41:70.
- [10] Abulhamail AS, Al-Sulami FE, Alnouri MA, Mahrous NM, Joharji DG, Alborgami MM, et al. Primary school teacher's knowledge and attitudes toward children with epilepsy. *Seizure* 2014;23:280–3.
- [11] Alamri S, Alghamdi A, Al Quait A. What Saudi teachers know about epilepsy: a cross-sectional study of Tabuk City. *Epilepsy Behav* 2018;89:169–72.
- [12] Jones C, Atkinson P, Cross JH, Reilly C. Knowledge of and attitudes towards epilepsy among teachers: a systematic review. *Epilepsy Behav* 2018;87:59–68.
- [13] Inoue Y, Kubota H, Kurihara M, Baba H, Hirata K, Matsuoka H. Situation of driving license for people with epilepsy 5 years after amendment of driving regulations in Japan: a questionnaire survey to driving authorities and doctors. *J Jpn Epilepsy Soc* 2009;26:483–9.
- [14] Iyoda K. Epilepsy and driving licenses: a questionnaire survey in Hiroshima after introducing new driving regulations. *Jpn J Neurosurg* 2009;18:660–5.
- [15] Sugiura N, Konuki S, Hirano K, Ozawa H. Survey results indicate lack of awareness about pediatric epilepsy in parents, health care providers and medical students. *No To Hattatsu* 2012;44:41–4.
- [16] Goel S, Singh N, Lal V, Singh A. Evaluating the impact of comprehensive epilepsy education programme for school teachers in Chandigarh City, India. *Seizure* 2014;23:41–6.
- [17] Eze CN, Ebuehi OM, Brigo F, Otte WM, Igwe SC. Effect of health education on trainee teachers' knowledge, attitudes, and first aid management of epilepsy: an interventional study. *Seizure* 2015;33:44–53.
- [18] Mecarelli O, Messina P, Capovilla G, Michelucci R, Romeo A, Beghi E, et al. An educational campaign about epilepsy among Italian primary school teachers. 2. The results of a focused training program. *Epilepsy Behav* 2015;42:93–7.
- [19] Dumeiera HK, Neiningera MP, Kaunea A, Schumachera PM, Merkschlagerb A, Kiessb W, et al. Seizure management by preschool teachers: a training concept focussing on practical skills. *Seizure* 2017;50:38–42.