



Knowledge and attitudes toward epilepsy among school teachers and counselors in Jordan

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ARTICLE INFO

Article history:

Received 6 February 2012

Revised 3 May 2012

Accepted 4 May 2012

Available online 8 June 2012

Keywords:

Epilepsy
Knowledge
Attitudes
Teachers
Counselors
Jordan

ABSTRACT

This study investigated the knowledge and attitudes of Jordanian school teachers and counselors toward epilepsy. A sample of 259 teachers and counselors completed the two-part questionnaire. Validity was assessed using an informed panel of judges, and test–retest reliability was established. The results showed average knowledge of epilepsy and generally favorable attitudes toward students with epilepsy. Although participants revealed apt knowledge about the causes and symptoms of epilepsy, they demonstrated poor knowledge about methods of dealing with seizures. However, participants scored high on items relating to the equality of rights and the need for further support. Findings indicated that although participants showed favorable attitudes, more information and awareness about epilepsy should be provided to teachers and counselors within the school systems of Jordan.

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1. Introduction

Epilepsy is the most common neurological disorder in the general population after stroke with a worldwide prevalence between 5 and 10 per 1000 [1–3], and other estimations suggest higher rates between 2.8 and 19.5 per 1000 [4–9]. A diagnosis of epilepsy has a major effect on children, especially among school children; it has become apparent that this effect can be observed within any school system both academically and psychosocially. The dramatic effect of having a seizure inside the classroom can be very devastating for the child, and children suffering from epilepsy are often stigmatized because of fear of the unexpected and public loss of self-control [10]. During a seizure, one may lose control of the body and return to a primitive form of behavior that may result in social rejection. Sometimes the social attitudes and discrimination against children with epilepsy may be more devastating than the disease itself. Some children with epilepsy may be banned from their classes because of frequent seizures, and some teachers are uncomfortable with their presence in the classroom [11]. Even with medical treatment, 30 to 40% of people with epilepsy are severely affected and continue to have seizures [12], therefore, understanding this stigma requires examination of the attitudes of not only the patient with epilepsy but also the community [13]. Because of the prevalence of epilepsy, the attitudes of teachers and counselors inside both public and private schools are important.

The practice of assessing attitudes and knowledge toward epilepsy has been studied over the past 60 years in Europe [13,14], North America [15], South America [10], Asia [12,16], and Africa [17], and surveys have contributed to the general awareness affecting the social acceptance of persons with epilepsy [18–23]. Furthermore, knowledge, perceptions, and attitudes toward epilepsy have been investigated among patients [24,25], health service providers [26–28], and the general public [21,23, 29–30]. The outcomes of previous research have found that although accurate perceptions of epilepsy have dramatically increased and that public attitudes have improved in certain parts of the world [21,23], misconceptions still persist [31]. These misconceptions can lead to negative attitudes, sadly having an effect on the social interaction among people with epilepsy and the general population. This effect can be observed in daily activities, the workplace, and most importantly, in educational settings by both teachers and peers. Accordingly, social problems encountered by schoolchildren with epilepsy, as a result of negative attitudes and beliefs, are enormous and likely to influence the educational performance of children with epilepsy [32], in addition to social skill development and post-school success in employment [33,34].

Although there have been research trials about epilepsy in the Middle East [26,29,35–38], most of the studies were either epidemiological or prevalence studies, and only two studies focused on attitudes and knowledge of epilepsy in Jordan. A study by Daoud and colleagues [37] discussed the general public knowledge and attitudes and revealed that the overall knowledge and attitudes of Jordanians toward epilepsy are relatively positive when compared with the results from Asian countries but are more negative when compared with the results from Western countries. Ootom and colleagues,

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who examined knowledge of management of epilepsy in young adults, found that most Jordanians are reasonably well informed about most aspects of the management of epilepsy, but there is still a need for public education about this disorder [39].

However, despite the high rate and significant impact of epilepsy worldwide, including the Middle East, little research in Jordan has focused on knowledge and attitudes of teachers and counselors working with school age students with epilepsy.

As a brief overview, the educational system in Jordan is divided into three parts: preschool level for two years, basic elementary/obligatory level that lasts for ten years, and secondary level for a period of two years. Specialized teachers called the Early Childhood teachers and Classroom teachers are responsible for providing instruction for the preschool and elementary levels, respectively. For the upper level (above third grade), specialized subject teachers provide the required education to students. All teachers are prepared through a rigorous process that includes core subject courses within the field of specialty. In contrast, the aim of counselors is to offer educational/psychological counseling to help students understand and overcome personal, social, or behavioral problems affecting their educational or vocational situations. Furthermore, counselors offer support services to teachers, students, and their families in issues relating to student problems, classroom problems, coping mechanisms, study skills, and many other educational and administrative tasks, as needed. Therefore, teachers and counselors are considered foundational for provision of services in the school setting, and their knowledge and attitudes toward epilepsy are likely to influence the educational performance, expectations, and quality of services provided.

The aim of this study was to examine the knowledge and attitudes toward epilepsy of teachers and counselors within Jordanian school settings. This study will provide information about the level of knowledge attained, in addition to revealing information about the need for further support to provide better services for students with epilepsy.

2. Methods

2.1. Study population

This study was conducted within the school systems in Amman, Jordan. Participants were school teachers and counselors working in public and private school settings. Amman was chosen for sampling because it is the capital of Jordan and has the largest population. Our convenience sample consisted of 259 teachers and counselors currently working in the school systems. Heads of educational directorates were contacted, and the goal and scope of the research were explained to obtain permission to disseminate the questionnaire. Printed copies were sent to the sample, with consents and written instructions of how to fill in the questionnaires. The cover letter emphasized that participation was voluntary, and all persons gave their informed consent prior to their inclusion in the study.

Two weeks after sending out the survey, 184 copies were returned back to the researchers. Follow-up calls were made to non-respondents to urge them to complete the survey. The total number of copies returned was 259 out of 300, reflecting a return rate of 86%.

2.2. Data collection

The questionnaire was formulated based on previously published surveys [10,33,40]. The questionnaire consisted of three parts, demographics (7 items), knowledge about epilepsy (38 items), and attitudes toward epilepsy (20 items). To establish face and content validity of the instrument, a pilot version was given to 10 faculty members from the faculties of medicine, nursing, and educational sciences at the University of Jordan. Comments and feedback were provided from the panel through additions, rephrasing, and elimination of items. The panel's comments were taken into consideration in

preparing the final version of the instrument. To minimize any misunderstanding or wording of the items, the initial instrument was piloted on a small group of 30 senior students majoring in education, and their feedback about the wording or phrasing of the items was taken into consideration in the final copy of the questionnaire. Test-retest reliability with the same group was conducted with a 2-week interval. Correlation coefficients were calculated for knowledge and attitude sections of the survey, with a knowledge coefficient of 0.92 and an attitude coefficient of 0.85. In addition, internal consistency of the scale was confirmed by a Cronbach's α coefficient of 0.79.

The knowledge section of the survey consisted of 38 items assessing knowledge of causes of epilepsy and management of epilepsy. Answers to these questions were based on binary 'yes' and 'no' responses. Frequencies and percentages of accurate responses were calculated. Attitudes about epilepsy were rated on a six-point Likert-type scale (6 = strongly agree, 1 = strongly disagree). Means for the attitude section were used as measures of the respondents' global attitude, with higher mean scores representing more enlightened and favorable attitudes. Some of attitude items were formulated in a negative way for validity and reliability purposes, and these items were reversed for scoring purposes.

2.3. Statistical analyses

Statistical analysis was carried out using SPSS for Windows Version 17.0 (SPSS Inc., Chicago, IL, USA). Results are expressed as frequencies, percentages, means, and standard deviations. The χ^2 test was used to test differences between variables. Values were considered statistically significant at $P < 0.05$. Also, an independent sample t -test was used to compare means of groups for effects.

3. Results

3.1. Demographic background

The demographic characteristics of the respondents are listed in Table 1. It can be observed that 26% of respondents were males and 74% were females. Sixty-five percent of participants were between

Table 1
Demographic characteristics of counselors and teachers.

Factor	N (%)
Gender	
Male	69 (26.6)
Female	190 (73.4)
Job	
Counselor	82 (31.7)
Teacher	177 (68.3)
Age	
20–30 years	169 (65.3)
30–45 years	77 (29.7)
Above 45	13 (5.0)
Experience	
1–5 years	158 (61.0)
5–10 years	47 (18.1)
10–15 years	28 (10.8)
More than 15 years	26 (10.0)
Qualification	
Diploma	54 (20.8)
Bachelor	179 (69.1)
Higher diploma	5 (1.9)
Masters	19 (7.3)
Ph.D.	2 (0.8)
Relatives	
Have close relatives or friends with epilepsy	52 (20.1)
Do not have close relatives or friends with epilepsy	207 (79.9)
Workshops	
Had workshops about epilepsy	10 (3.9)
Did not have any workshops about epilepsy	249 (96.1)

20 and 30 years, 30% were between 31 and 45 years, and 5% were above the age of 45 years. Around 20% of the sample had a close relative or friend with epilepsy. This is a relatively high percentage since Jordan is a conservative community, and citizens usually do not disclose such information outside of the family.

3.2. Knowledge of epilepsy

Knowledge of epilepsy among teachers and counselors was relatively average; scores were computed by giving a score of 1 for an accurate answer and a 0 for an inaccurate answer. *t*-Test results indicated that teachers showed significantly less knowledge of epilepsy compared to counselors [$t(257) = 3.193, P < 0.05$; teachers ($M = 0.58, SE = 0.006$); counselors ($M = 0.62, SE = 0.008$)]. Furthermore, there were significant discrepancies in seven of the items between teachers and counselors, with teachers scoring lower than counselors for all seven items (see italicized items in Table 2). Furthermore, both teachers and counselors scored low on items related to the causes of epilepsy, the effect of medications on personal mood and body functioning, and most importantly, both teachers and counselors had a major deficiency in methods of dealing with epilepsy. The item "During the seizure, it is preferred to put something in the mouth to keep the airway open" had the lowest score for both parties, followed by the item "It is better to stabilize both feet and hands to reduce the effect of the seizure." Table 2 includes response averages of teachers and counselors for all knowledge items.

Table 2
Frequencies, percentages and χ^2 values for knowledge of teachers and counselors.

Items	Number (%) responding accurately			
	Teachers (n = 177)	Counselors (n = 82)	Total (n = 259)	<i>P</i> value
1 <i>The individual with epilepsy does not possess a normal life expectancy</i>	72 (40.7)	54 (65.9)	126 (48.6)	0.000
2 <i>Epilepsy is not a contagious disease</i>	150 (84.7)	72 (87.8)	222 (85.7)	0.513
3 All epileptics suffer convulsions and loss of consciousness	81 (45.8)	40 (48.8)	121 (46.7)	0.651
4 <i>Epilepsy is a neurological problem</i>	148 (83.6)	76 (92.7)	224 (86.5)	0.047
5 <i>Epilepsy is a problem that only affects children</i>	161 (91.0)	72 (87.8)	233 (90.0)	0.432
6 <i>Surgery is the best treatment for epilepsy</i>	136 (76.8)	74 (90.2)	210 (81.1)	0.010
7 <i>Epilepsy is a chronic condition that is untreatable</i>	92 (52.0)	54 (65.9)	146 (56.4)	0.036
8 <i>Heredity is the main cause of epilepsy</i>	80 (45.2)	40 (48.8)	120 (46.3)	0.591
9 All muscular convulsions are considered epileptic	136 (76.8)	68 (82.9)	204 (78.8)	0.265
10 <i>Epilepsy is highly associated to other mental problems</i>	68 (38.4)	30 (36.6)	98 (37.8)	0.777
11 <i>Epilepsy has many kinds</i>	153 (86.4)	74 (90.2)	227 (87.6)	0.387
12 <i>Lack of attention, and staring in space is one of the marks of a seizure</i>	99 (55.9)	64 (78.0)	163 (62.9)	0.001
13 <i>Epilepsy and seizures have no direct effect on school achievement</i>	100 (56.5)	42 (51.2)	142 (54.8)	0.427
14 Medications have negative effect on the personal mood and body function	35 (19.8)	16 (19.5)	51 (19.7)	0.961
15 <i>During the seizure, it is preferred to put something in the mouth to keep the airway open</i>	22 (12.4)	6 (7.3)	28 (10.8)	0.218
16 <i>Epilepsy can be considered a medical case that requires an immediate contact with the emergency</i>	67 (37.9)	42 (51.2)	109 (42.1)	0.043
17 <i>The best thing to do for a person having a seizure is to put him on the side till the end of it</i>	137 (77.4)	56 (68.3)	193 (74.5)	0.118
18 <i>It is better to stabilize both feet and hands to reduce the effect of the seizure</i>	55 (31.1)	22 (26.8)	77 (29.7)	0.487
19 <i>Electric shocks is considered as one of the best therapies for epilepsy</i>	107 (60.5)	46 (56.1)	153 (59.1)	0.507
20 <i>Physicians can determine the causes of epilepsy in most cases</i>	56 (31.6)	24 (29.3)	80 (30.9)	0.701
21 <i>Brain trauma/damage is the main cause of epilepsy</i>	103 (58.2)	62 (75.6)	165 (63.7)	0.007
22 <i>Epilepsy begins as a medical problem and ends as a psychosocial problem</i>	156 (88.1)	72 (87.8)	228 (88.0)	0.939
23 <i>Seizures usually last for 15–30 minutes</i>	78 (44.1)	38 (46.3)	116 (44.8)	0.732
24 <i>Fear, stress, and sleep deprivation can be considered as provoking factor for epileptic seizures</i>	149 (84.2)	72 (87.8)	221 (85.3)	0.443
25 <i>Severe sensory stimulation is considered as one of the factors that might lead to a seizure</i>	140 (79.1)	56 (68.3)	196 (75.7)	0.059
26 <i>Fear of the seizure is a factor in inducing seizures</i>	142 (80.2)	72 (87.8)	214 (82.6)	0.134
27 <i>After the end of the seizure the person with epilepsy usually returns back to his normal status</i>	141 (79.7)	58 (70.7)	199 (76.8)	0.113
28 <i>Seizures usually come in different types every time it happens</i>	88 (49.7)	40 (48.8)	128 (49.4)	0.888
29 <i>Most people feel the onset of the seizure before it happens</i>	86 (48.6)	40 (48.8)	126 (48.6)	0.977
30 <i>Seizures never happen while sleeping or while the person is alone</i>	127 (71.8)	60 (73.2)	187 (72.2)	0.813
31 <i>Children with epilepsy can engage in physical activities with some considerations</i>	143 (80.8)	72 (87.8)	215 (83.0)	0.162
32 <i>It's a misconception that all seizures are produced due to extra electrical/neurological activity</i>	100 (56.5)	56 (68.3)	156 (60.2)	0.071
33 <i>The physician responsible for the diagnosis of epilepsy is the psychiatrist</i>	94 (53.1)	48 (58.5)	142 (54.8)	0.414
34 <i>Grand mal seizures are the most common of all seizures</i>	68 (38.4)	30 (36.6)	98 (37.8)	0.777
35 <i>In all seizures people lose consciousness and fall down</i>	65 (36.7)	38 (46.3)	103 (39.8)	0.141
36 <i>Epilepsy is one of the least widespread problems especially in infants</i>	68 (38.4)	30 (36.6)	98 (37.8)	0.777
37 <i>Convulsions due to high temperature in infants are considered as one of the types of epilepsy</i>	84 (47.5)	42 (51.2)	126 (48.6)	0.573
38 <i>Medication helps in controlling seizures in most cases</i>	157 (88.7)	78 (95.1)	235 (90.7)	0.097

Items in italics are significantly different for teachers and counselors.

3.3. Attitudes toward epilepsy

The overall mean of the item responses provided a measure of the global attitude, with higher values representing a more positive attitude. Results showed that both teachers and counselors in Jordan demonstrated a higher than average positive attitude toward epilepsy. *t*-Tests indicated that teachers ($M = 3.85, SE = 0.035$) reported less positive attitudes toward epilepsy than counselors ($M = 3.89, SE = 0.062$), but the difference was not significant $t(257) = 0.605, P > 0.05$.

Both teachers and counselors scored high on items related to the equality of rights for persons with epilepsy ($M = 4.93$) and the need for supportive of social services ($M = 4.84$). Nevertheless, compared to teachers ($M = 3.27$), counselors scored low ($M = 2.76$) on the need to protect children from classmates who have epilepsy, while both teachers and counselors agreed that individuals with epilepsy are more accident-prone. Table 3 provides further insight about the attitudes of teachers and counselors toward people with epilepsy.

4. Discussion

The aim of this study was to investigate the knowledge and attitudes of teachers and counselors toward people with epilepsy and to identify any negative aspects that might affect the delivery of services to students with epilepsy. The levels of knowledge of epilepsy of the teachers and counselors were relatively average; however, counselors demonstrated a higher level of knowledge than teachers. Regarding attitudes,

Table 3
Means and standard deviations for attitude items of teachers and counselors.

Items	Means (SD)		
	Teachers	Counselors	Average for sample
1 Schools should not place children with epilepsy into regular classrooms ^a	4.06 (1.5)	3.85 (1.9)	4.00 (1.6)
2 Persons with epilepsy have the same rights as all people	4.88 (1.4)	5.05 (1.4)	4.93 (1.4)
3 Insurance companies should not deny insurance to individuals with epilepsy	3.99 (2.2)	4.71 (1.9)	4.22 (2.1)
4 The individual with epilepsy should not be prevented from having children	3.74 (1.3)	3.56 (1.5)	3.68 (1.4)
5 Persons with epilepsy should be prohibited from driving ^a	2.47 (1.5)	3.07 (1.7)	2.66 (1.6)
6 Children with epilepsy should attend regular public schools	3.73 (1.4)	3.56 (1.5)	3.68 (1.4)
7 Children need to be protected from classmates who have epilepsy ^a	3.27 (1.7)	2.76 (1.4)	3.11 (1.6)
8 Parents should expect of their child who has epilepsy what they expect of other children	3.60 (1.4)	3.61 (1.7)	3.61 (1.5)
9 Persons with epilepsy should not be prohibited from marrying	4.10 (1.2)	3.76 (1.5)	3.99 (1.3)
10 Persons with epilepsy prefer to live with others of similar characteristics	3.79 (1.4)	4.02 (1.3)	3.86 (1.4)
11 Equal employment opportunities should be available to individuals with epilepsy	4.14 (1.3)	4.10 (1.4)	4.12 (1.4)
12 When their seizures are controlled by medication, persons with epilepsy are just like anyone else	4.64 (1.1)	4.71 (1.2)	4.66 (1.1)
13 Families of children with epilepsy should not be provided supportive social services ^a	4.75 (1.2)	5.02 (1.1)	4.84 (1.2)
14 Persons with epilepsy can safely operate machinery	3.11 (1.5)	3.51 (1.3)	3.24 (1.5)
15 Individuals with epilepsy are accident-prone ^a	2.76 (1.1)	2.98 (1.0)	2.83 (1.1)
16 Epilepsy is a degenerative condition that will lead to other mental problems ^a	3.36 (1.3)	3.59 (1.3)	3.43 (1.3)
17 Epilepsy and epilepsy medications can have a significant effect on students' mood, memory, and learning ^a	3.11 (1.1)	3.15 (1.4)	3.12 (1.2)
18 I would like to have more information about epilepsy and methods of dealing/coping with it	4.72 (1.3)	4.78 (1.5)	4.74 (1.4)
19 Epilepsy is a form of mental illness or insanity ^a	4.26 (1.4)	3.83 (1.7)	4.12 (1.5)
20 Epilepsy is considered as a disability, therefore disability acts apply to it ^a	4.62 (1.5)	4.32 (1.6)	4.53 (1.5)

Note. Potential range = 1 to 6, based on a Likert-type scale including the following: 1 = I disagree very much, 2 = I disagree pretty much, 3 = I disagree a little, 4 = I agree a little, 5 = I agree pretty much, and 6 = I agree very much.

^a Items for which a "disagree" response (scored negatively have been reversed) indicates a positive attitude.

both teachers' and counselors' attitudes toward epilepsy were favorable, and their attitudes did not differ significantly.

These findings are interesting in light of the fact that the university preparation programs for teachers in Jordan rarely include elements related to epilepsy or other chronic illnesses. Counselors, in contrast, have a better chance of getting more information due to their educational preparation that includes content on mental health and neurological problems, including epilepsy, which was reflected in their knowledge levels on the questionnaire. Almost all teachers and counselors reported that they did not go through any post-education training related to epilepsy, thus we can deduce that most of the participants' knowledge was gained from other resources such as families, media or prior experiences with students with epilepsy.

The findings that teachers and counselors had a moderate level of knowledge of epilepsy are in agreement with those of several other studies, especially to that of Daoud and colleagues [37]. Generally, the participants revealed apt knowledge in items related to the causes and symptoms of epilepsy; however, poor knowledge was reflected in items relating to the correct methods of dealing with seizures such as "During the seizure, it is preferred to put something in the mouth to keep the airway open" and "It is better to stabilize both feet and hands to reduce the effect of the seizure." These responses suggest that most of the knowledge obtained about epilepsy was probably attained from non-reliable resources such as the mass media, World Wide Web, general discussions, and other resources that are not factual.

Results also revealed that both teachers and counselors tended to have generally positive attitudes toward epilepsy. This result is very encouraging, especially because prior findings by Daoud and colleagues [37] were not as positive. This finding may be attributed to several reasons, including the educational level of our sample of a bachelor's degree or higher (which is the requirement for teaching in Jordan), teachers' and counselors' continuous exposure to students with epilepsy in schools, and public education programs about epilepsy that have been more pronounced over the past decade.

Other indicators of our participants' positive attitudes toward people with epilepsy were reflected in items such as the right for marriage, having children, and employment. The finding of the item for marriage were consistent with a study from Kuwait [41], but in contrast to the findings of Daoud and colleagues [37] and another study from the United Arab Emirates [29], where 88.5% and 86% of the general public,

respectively, objected to marriage for people with epilepsy. This could be due to differences in the wording of the questionnaires. Our questionnaire inquired about general attitudes toward marriage – "Persons with epilepsy should not be prohibited from marrying," while previous questionnaires used a more personalized item – "Would you approve the marriage of your son or daughter to a person with epilepsy."

Our participants also supported the right of people with epilepsy to have children, consistent with Daoud and colleagues in Jordan. In their study, 71% of the sample affirmed that people with epilepsy can have children [37], and was partially supported by an Egyptian study [42], with 64.3% of the participants being supportive. Results from the Kuwait study [43] were more neutral with 44% of the participants in favor of this right. As for employment, our study showed more positive attitudes than the Daoud and colleagues study [37]. Again this could be due to the heterogeneity of their public sample, compared to our sample of teachers and counselors.

Attitudes that were more negative consisted of items that would affect others around people with epilepsy. For example, counselors implied the need for protection of children from classmates who have epilepsy, while both teachers and counselors stated that persons with epilepsy should be prohibited from driving. Driving was addressed in previous research [42,44]. The thought of having a seizure while driving is considered as a major risk to the person and the public [41]. Our participant responses reflected a more negative attitude toward persons with epilepsy driving. This result was expected, especially because there are no governmental/medical regulations in Jordan that monitor the licensing of drivers with epilepsy. Therefore, it becomes a personal/ethical choice for a person with epilepsy whether to drive or not.

Finally, two other major findings are worth noting. First, we found that both groups would like to have more information about epilepsy, which highlights the great need for well-studied awareness programs about epilepsy and methods of managing it. Second, it is important to note that in our study both teachers and counselors stressed the right for every child to be included within the general classroom alongside their peers. This is a very promising result that reflects the humanistic and holistic nature of participants in both groups. This is especially important because of the influential roles that both teachers and counselors have on changing the attitudes of students without medical conditions and on changing and promoting positive attitudes toward their peers with epilepsy [45].

4.1. Limitations

The limitations of the study are related to the use of a questionnaire and the sample used. The questionnaire was a self-report tool, and the participants' responses to the attitude sections may have been influenced by perceptions of socially acceptable responses. Future research utilizing different data collection instruments should include other kinds of information that may be important in school settings. Second, future samples in Jordan should have larger and better representation of other school personnel (e.g., occupational therapists, physical therapists, speech therapists) and administrators as well as the three educational regions in Jordan. Thus, caution is necessary in generalizing the results to smaller school systems and rural areas.

5. Conclusion

The study showed overall average knowledge of epilepsy and generally favorable attitudes toward people with epilepsy among school teachers and counselors in Jordan. The study recommends further research to explore the practical aspects of epilepsy knowledge needed to promote greater knowledge about managing epilepsy. The study also recommends conducting research on practical knowledge and behaviors of other key service providers, such as health practitioners (occupational, physical, speech, etc.) and administrators. Public education about epilepsy through structured programs, either within the educational system or the mass media, is highly desirable to modify any misconceptions about epilepsy, as well as to promote positive attitudes toward people with epilepsy.

Acknowledgments

The authors would like to thank Professor Margo B. Holm, PhD, OTR/L, Department of Occupational Therapy, University of Pittsburgh for her efforts in editing this manuscript.

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