

Teachers' Preferred Methods of Gaining Information About Epilepsy

by

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ABSTRACT

Children with epilepsy represent a unique group of students who may require accommodations in school to be optimally successful. Therefore, it is important for teachers to understand the possible academic consequences epilepsy can have on a child. An important step in providing this information about epilepsy to teachers is understanding where they would prefer to acquire this information. The current study examined differences between teachers of differing ages, school levels and special education teaching status in their preferences for gaining information from parents and the internet.

Contrary to expectations, older teachers (those 56 years of age and older) were no less likely than younger teachers to prefer information from the internet. As predicted, elementary school teachers were more likely than high school teachers to prefer information from parents. However, interestingly middle school teachers were also more likely to prefer information from parents than high school teachers. Lastly, contrary to hypothesized results, special education teachers were no more likely to prefer information from parents than non-special education colleagues. Limitations of this study, implications for practice and directions for future research are discussed.

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Chapter 1

BACKGROUND

Epilepsy is one of the most common neurological disorders in children (Nabors, Little, Akin-Little, & Iobst, 2008). According to the Epilepsy Foundation website (<http://www.epilepsyfoundation.org/>), epilepsy affects over 300,000 children under the age of 14. Epilepsy is characterized by abnormal electrical activity in the brain and seizures. Children with epilepsy are likely to experience social and educational problems because of various aspects of the disorder (Bishop & Boag, 2006). For example, common social consequences associated with epilepsy include living in an environment in which peers hold negative attitudes toward them and discriminate against them (Lee, Lee, Chung, Yun, & Choi-Kwon, 2010). This can often lead to low self-esteem and social adjustment problems among affected children (Baker, et al., 2008). In addition to social problems, academic performance can be negatively impacted by a seizure itself, a coexisting cognitive deficit, anti-epileptic drug (AED) side effects or social and emotional problems (Wodrich, & Cunningham, 2008).

Teachers spend a significant amount of time with students and can therefore influence their lives. Accordingly, a teacher may be able to reduce the problems experienced by children with epilepsy at school (Lee, Lee, Chung, Yun, & Choi-Kwon, 2010). However, to be able to do so optimally, teachers should be knowledgeable about epilepsy and the possible risks to a student's academic performance and social life. Unfortunately, previous research examining teachers' knowledge regarding epilepsy suggests that teachers do not possess this

knowledge. In a national study of teachers' perceived knowledge about epilepsy Bishop and Boag (2006) surveyed 512 general and special education teachers. Using a six point Likert-type scale (1 = "No Knowledge", 6 = "Extensive Knowledge") teachers' perceived knowledge about the life circumstances of individuals with epilepsy was measured. They found that 70% of teachers rated their knowledge at or below 3, and 92% rated their knowledge at or below 4. Teachers reported feeling unprepared to appropriately handle the occurrence of a seizure in the classroom. Teachers also indicated feeling as if they had insufficient knowledge about the educational impacts of epilepsy. A similar study used a six point Likert-type scale (1 = "not at all knowledgeable" 6 = "very knowledgeable") to examine the perceived knowledge of 247 elementary school teachers about various chronic illnesses including epilepsy. Of this sample, 22% were special education teachers. It was found that only 15.2% of teachers believed they were "very well informed" (a rating of 5 or 6) about epilepsy. Of this same group of teachers only 27.9% reported feeling "very confident" (a rating of 5 or 6) in meeting the academic needs of a student with epilepsy. Special education teachers reported significantly more knowledge about epilepsy than regular education teachers. However, special education teachers did not report more confidence than regular education teachers (Nabors, Little, Akin-Little, & Iobst, 2008). Regarding teachers' factual knowledge about epilepsy, a study of elementary school teachers in Korea found that nearly 70% of respondents knew that epilepsy is a neurological disorder. However, more than one third also believed that epilepsy is a genetic disorder and less than one half believed that

epilepsy can be treated with proper medication. Importantly, in this group of teachers, lower knowledge scores were significantly correlated with more negative attitudes towards individuals with epilepsy (Lee, Lee, Chung, Yun, & Choi-Kwon, 2010). In another study of teacher factual knowledge, elementary through high school teachers in the United States were surveyed. Knowledge and confidence were measured for teachers currently teaching a student with epilepsy (CTs) and teachers in general (TiGs; i.e., those not teaching a student with epilepsy) were measured. This study included 91 CTs and 203 TiGs. In this sample, CTs were more knowledgeable about epilepsy and more confident working with a student with epilepsy than TiGs. Knowledge and confidence were significantly correlated with more knowledgeable teachers also being more confident. The sample included special education teachers. Special education teachers were found to have more knowledge and higher confidence than regular education teachers. This is the only known study which specially examined the knowledge of teachers currently teaching a student with epilepsy (Wodrich, Jarrar, Buchhalter, Levy, & Gay, 2011).

It appears that teachers' negative attitudes about students with epilepsy can lead to lowered expectations and perceived achievement. In a recent study, 125 children with epilepsy were rated by their teachers as having lower achievement than children without epilepsy based on the Teacher Report Form of the Achenbach's Child Behavior Checklist (Achenbach & Rescorla, 2001). These ratings held true even though the two groups were equal on the Woodcock-Johnson Revised Tests of Achievement (Woodcock, & Johnson, 1990), a

standardized test of academic achievement (Katzenstein, Fastenau, Dunn, & Austin, 2007).

Fortunately, it has been shown that teacher's negative attitudes about epilepsy can be improved when knowledge is increased. In a study in Istanbul, teachers attending a lecture were given information about the causes, consequences, and social aspects of epilepsy, and shown videos of common seizure types. They were also given a pre- and post-lecture questionnaire to examine their awareness and knowledge about epilepsy and its management, as well as attitudes towards and beliefs about the employment, driving, and social activities of individuals with epilepsy. In the pre-lecture questionnaire, almost 20% of respondents believed that epilepsy was a psychological disease. After the lecture, this number dropped to only 7%. The belief that a person should be held down during a seizure fell from nearly 30% before the lecture to only 4% after. Overall attitude about epilepsy improved after the lecture. This included an increase in the belief that students with epilepsy could be successful in a regular education classroom (Bekiroğlu, Özkan, Gürses, Arpacı, & Dervent, 2004). These results suggest that teachers' knowledge and attitudes about epilepsy can be improved from their apparently low levels.

It is not surprising that Bishop and Boag (2006) found that more than 90% of teachers reported a desire for more knowledge about epilepsy in general and how to handle it the classroom. Specifically, teachers identified "seizure classification, classroom seizure management and first-aid, etiology and treatment, impact of epilepsy and its treatment on school performance, talking

about epilepsy in the classroom and helping other students understand seizures and epilepsy, and effective parent-teacher communication” (p. 404) as areas in which they would like to learn more.

Experts have suggested many resources for teachers to use to gain epilepsy knowledge. Among these are medical professionals (Nabors, Little, Akin-Little, & Iobst, 2008; Thacker, et al., 2007), parents, the child with epilepsy, a school designated professional (psychologist or special education teacher) to support regular education teachers (Nabors, Little, Akin-Little, & Iobst, 2008), printed materials (Bishop & Boag, 2006), and websites from groups such as the Epilepsy Foundation, The Epilepsy Project and the Centers for Disease Control and Prevention (Bishop & Boag, 2006).

Some international research has examined which resources teachers have used in the past to acquire epilepsy knowledge. For example, in a study of teachers in India, the main sources for information were found to be the media and parents of students with epilepsy (Thacker, Verma, Ji, Thacker, & Mishra, 2007). In a Korean study, the two most common sources of epilepsy knowledge were word of mouth and mass media (Lee, Lee, Chung, Yun, & Choi-Kwon, 2010). One study has examined where teachers in the United States currently obtain information about epilepsy. Teachers indicated similar utilization of many available resources such as parents, school nurse, readings, websites and other teachers (Wodrich, Jarrar, Buchhalter, Levy & Gay, 2011).

Although some international information has been gathered about where teachers currently acquire epilepsy information and even though researchers have

suggested resources that are available, no one has yet examined where teachers would prefer to get information about epilepsy. However, this has been studied for some chronic childhood conditions other than epilepsy and these studies might hold implications for teachers seeking information about epilepsy. As an example, concerning type 1 diabetes mellitus, Cunningham and Wodrich (2006) found that 93% of teachers indicated that they would seek information from a school nurse and 90% would seek information from the student's parents. The student's physician was only endorsed as a preferred source of information by 53% of teachers. Although many epilepsy related websites exist, the internet was not included as a possible source of information in this study.

The current study aims to help determine where contemporary teachers in the United States prefer to acquire information about epilepsy. Preferences are expected to differ based on teacher characteristics. Specifically, the following characteristics will be used to predict differences in teachers' preferences for various sources of epilepsy information: a) teachers' chronological age, b) the school level in which teachers work (i.e., elementary, middle or high school) and c) special education teaching status (i.e., regular vs. special education).

Internet access is widespread, and it is obvious that many individuals, including teachers, now acquire information on diverse topics via the internet. It is also apparent from popular culture that young people are more comfortable with the internet than older adults; some research supports this notion. In 2005, Zhang examined the perceived usefulness of the internet and anxiety associated with its use among 680 business workers. This study found that older adults (i.e., those

age 50 years and older) expressed higher anxiety associated with using the internet than did younger adults (i.e., those under the age of 50). Older adults also indicated feeling that the internet was less useful than their younger co-workers did. In a more recent survey, the Pew Internet and American Life Project (Fox, 2010) found that only 38% of older adults (defined as age 65 years and older) use the internet. This number is significantly lower than the 74% of the general population (defined as age 18 years and older) who use the internet. If these findings generalize to teachers, older teachers may be less comfortable than younger teacher in using the internet to acquire information about school-related topics, including information about epilepsy. Thus, there are reasons to anticipate age differences among internet use to acquire information about epilepsy.

The context of education is different for those who teach in elementary schools and those who teach at higher grade level. Related to this fact, it is likely that the nature of parent-teacher relationships differ between elementary school and secondary (middle and high) school settings. For example, Eccles and Harold observed that secondary school settings are typically larger, both regarding physical size and size of population, and universally utilize departmentalized instruction in which students have many teachers for different subjects. Consequently, they suggest that this subject-oriented instructional style can result in less personal contact between teachers and both students and parents at high school levels than is true at elementary levels (Eccles, & Harold, 1993). This difference has been illustrated in an empirical study of family-school relationships in elementary and secondary grades in which teachers and parents characterized

their trust in one another. In this study, teachers were asked to rate on a 4-point Likert-type scale (0 = “Strongly disagree”, 3 “Strongly agree”) how much they agreed with statements regarding their trust of a student’s parents. Examples of these statements are “[parents] make me aware of all the information I need about their child” and “[parents] are easy to reach when I have a question or problem.” Like teachers, parents were asked to rate on a similar 4-point Likert-type scale how much they agreed with similar statements regarding their trust of their child’s teacher. Critically for the current study, the trust between teachers and parents of elementary grade students was significantly stronger than the trust between teachers and parents of middle and high school students (Adams, & Christenson, 2000). Thus, in the current study it is anticipated that a closer (and perhaps more trusting) parent-teacher relationship in elementary grade levels may impact a teacher’s willingness to ask parents for epilepsy information. That is, parents themselves may be higher preferences as information sources about epilepsy among elementary than middle and high school teachers.

Finally, it is recognized that special education teachers are trained to work with exceptional students. This may include students with chronic illnesses, such as epilepsy. As is true for elementary school teachers, special education teachers (at all grade levels) may experience particularly close working relationships with parents. This may be due to the special needs of the students that require progress monitoring and frequent changes in instruction. Although there are no studies with control groups, research to support this idea does exist. In a study of 45 parents of students in special education, parents were asked questions about their

involvement in their child's special education services, including how often they communicated with their child's teacher. Extremely frequent contact (daily) was reported by most (51%) parents. Furthermore, 84% of parents reported contacting their child's teacher at least twice a month (Spann, Kohler, & Soenksen, 2003). The magnitude of these numbers suggests significant communication between parents and special education teachers. During this communication, special education teachers may be likely to seek information about epilepsy from parents.

Based on this review the following hypotheses are offered. The first hypothesis is in regard to age. Older teachers may be less likely than younger teachers to prefer using the **internet** to find information about epilepsy. The second hypothesis is in regard to current school level taught. Teachers of elementary level students may be more likely than teachers of secondary grade levels to prefer epilepsy information from **parents** of students with epilepsy. Lastly, the third hypothesis is in regard to teachers' special education status. Current special education teachers may be more likely than regular education teachers to prefer to contact **parents** of students with epilepsy for epilepsy information. These findings may be useful in determining what resources should be made available to teachers to provide relevant information about epilepsy.

Chapter 2

METHOD

Survey Instrument

The data obtained for this study was part of a larger study of teacher knowledge and confidence teaching students with epilepsy (Wodrich, Jarrar, Buchhalter, Levy, & Gay, 2011). A survey was created for that study that included 25 multiple-choice epilepsy knowledge questions related to education, 14 Likert-type confidence questions regarding situations involving a student with epilepsy, a section about teachers' previous sources of epilepsy knowledge and a section about teachers' preferred sources of epilepsy knowledge. The section about teachers' preferred sources of epilepsy knowledge included the question "under ideal circumstances, in the future, how much of your epilepsy-related knowledge would come from the following resources?" The sources included were "a website devoted to epilepsy, other teachers, a school nurse, parents of a student with epilepsy, readings and manuals devoted to epilepsy, workshops devoted to epilepsy, presentations to teachers by medical personnel, a student with epilepsy, college/university course(s) during teacher preparation and other". Each source was rated on a 5-point Likert-type scale based on the amount of knowledge preferred from the source: 1 = "none of my knowledge", 2 = "a little of my knowledge", 3 = "some of my knowledge", 4 = "a lot of my knowledge" and 5 = "all of my knowledge."

The survey also included a section of demographic information. Age was measured with five groups: less than 25, 26-35, 36-45, 46-55 and 56 and older.

Grade level was measured as elementary, middle/junior high or high school. A question was included about teachers' current special education teaching status. A final demographic question was used to determine if the teacher was currently teaching a student with epilepsy or another seizure disorder or not.

Participants

A total of 294 teachers completed the survey. Of these, 203 were teachers in general (TiGs; i.e., those not teaching a student with epilepsy) and 91 were current teachers (CTs; i.e., teachers currently teaching a student with epilepsy). This sample included kindergarten-12th grade teachers from public, private and charter schools. Teachers were primarily teaching in the state of Arizona (one participant was teaching in California). Complete demographic information can be found in Table 1.

Procedure

CTs were initially recruited through parents during outpatient visits or inpatient stays at an epilepsy monitoring unit in Arizona. After parent permission to contact a student's teacher was obtained, his/her principal was contacted via telephone to obtain permission to contact the teacher and send him/her the survey at the school. After the principal agreed that the survey could be sent, the concerned teacher was contacted via telephone or email to be recruited. If the teacher agreed to participate, a survey was mailed to him/her via certified mail. Return postage was provided.

TiGs were recruited on a school-wide basis at five local schools during staff meetings with principal permission. If a teacher at a school-wide survey

administration indicated on the survey that he/she was currently teaching a student with epilepsy or another seizure disorder, that teacher became part of the CT group.

All teachers were given a \$10 gift card as an incentive for participation. CTs, who received the survey in the mail, received the gift card with the survey. Teachers who completed the survey at a school-wide administration received the gift card after the survey was completed.

Chapter 3

RESULTS

This study includes three independent variables and two dependent variables. Independent variables include age, school level currently taught and special education teaching status. Dependent variables include ratings on Likert-type questions regarding the preference for obtaining information from parents and the internet.

Descriptive statistics were examined first. Frequencies for independent and dependent variables were looked at to find possible confounding data. Specifically, group differences that may influence dependent variable outcomes, such as a higher frequency of special education teachers in one school level than another, were considered. No difference was found between the percentages of current special education teachers at different school levels ($\chi^2[2, N = 293] = 2.13, p = .345$). Frequencies and percentages of special education and non-special education teachers at each school level can be found in Table 2. In addition, differences in independent variables between CTs and TiGs were assessed to determine if further analyses should be conducted on these groups separately. No differences between the percentages of CTs and TiGs in different grade levels were found ($\chi^2[2, N = 294] = 2.27, p = .321$). Frequencies and percentages of CTs and TiGs at each school level can be found in Table 3. However, when the percentages of CTs currently teaching special education were compared across school levels, differences were found. At the middle and high school levels the percentage of CTs currently teaching special education (40.9% and 34.1%

respectively) was greater than the percentage of TiGs currently teaching special education (9.1% and 11.5% respectively) ($\chi^2[1, N = 66] = 9.39, p = .002$ and $\chi^2[1, N = 119] = 8.81, p = .003$). However, this difference was not seen at the elementary school level (21.4% of CTs and 9.9% of TiGs) ($\chi^2[1, N = 109] = 2.48, p = .115$). Frequencies and percentages of CTs and TiGs at each school level currently teaching special education or not currently teaching special education can be found in Table 4. Because the number of special education teacher differs across school levels for CTs and TiGs, layers will be utilized in subsequent chi-square analyses to further examine the differences.

Additional analyses were also completed before data regarding this study's three hypotheses were addressed. Examination of teachers' epilepsy knowledge (as measured by performance on the Knowledge subscale of the TEKCS) was used to determine if existing epilepsy knowledge was related to where teachers prefer to get future knowledge. However, no significant correlation were found between teacher epilepsy knowledge and preference for getting knowledge from parents ($r = 0.023, p = .703$) or the internet ($r = -0.112, p = .059$; See Table 5).

Next, for the TiG group, teachers from the five different schools were examined separately to determine if school environment was related to any variables. It was discovered that knowledge level for teachers from the five different schools did not differ significantly ($F[4, 198] = .636, p = .638$). Mean knowledge scores for each school can be found in Table 6. On the other hand, there was a significant difference among teachers from the five schools for their

desire to gain information from websites ($\chi^2[16, N = 198] = 27.58, p = .035$; See Table 7). The first and fourth schools (mean = 2.52 and 2.62 respectively) were less likely to prefer the internet than the second, third and fifth schools (mean = 2.70, 2.98 and 2.99 respectively). Preference for gaining information from parents did not differ between the five schools ($\chi^2[16, N = 198] = 16.05, p = .450$; See Table 8). The five schools differed on school level and socioeconomic status. The first and fifth schools were of higher socioeconomic status than the second, third and fourth. Socioeconomic status was rated based on percentage of school population participating in free or reduced lunch. Regarding school level, the fifth school was high school level, the third school was middle school level and the remaining three schools were elementary level schools.

To examine the three proposed hypotheses, chi-square analyses were conducted. Regarding the first hypothesis, a chi-square analysis examined if teachers of different ages were equally likely to prefer gaining information from internet resources. Teachers in all age groups were equally likely to report a preference for finding epilepsy related information on the internet ($\chi^2[16, N = 284] = 8.74, p = .924$). Contrary to the first hypothesis, younger teachers were no more likely to prefer the internet than were older teachers. Average preference for information from the internet of the five age groups ranged from 2.78 to 3.00 on a 5 point scale. The average preferences of each age group for gaining information from the internet can be found in Table 9. Older adults were defined as those who participants 56 years of age or older. This age group's average preference for information from the internet was 3.00.

Regarding the second hypothesis, a chi-square analysis was done to examine if teachers in different school levels were equally likely to prefer gaining information from parents. Consistent with the second hypothesis, teachers at different school levels differed significantly in their preference for gaining information from parents ($\chi^2[8, N = 285] = 20.24, p = .009$; See Table 10). As predicted, teachers at elementary levels reported a higher preference for gaining information from parents (mean = 3.58) than did high school teachers (mean = 3.04). Contrary to expectations, however, teachers at the middle school level also reported a higher preference for getting information from parents (mean = 3.48) than did high school teachers but no less of a preference than elementary school teachers.

Regarding the third hypothesis, the last chi-square analysis examined if current special education and non-special education teachers were equally likely to prefer gaining information from parents. Current special education (mean = 3.31) and non-special education (mean = 3.34) teachers did not differ significantly in their preferences for getting information from parents ($\chi^2[4, N = 285] = 4.00, p = .406$; See Table 11).

Lastly, it is likely that previous experience teaching a student with epilepsy has an effect on where a teacher chooses to get knowledge in the future. However, previous experience teaching children with epilepsy was not measured in this study. Based on the number of teachers from the school-wide survey administrations that reported currently teaching a student with epilepsy, an attempt was made to determine how many other teachers may have had

experience teaching a student with epilepsy in the past. Out of 244 teachers surveyed at school-wide administrations, 41 teachers reported that they were currently teaching a student with epilepsy. This suggests that approximately 17% of teachers in a given year may be teaching a student with epilepsy. The cumulative probability of having taught a student with epilepsy from year to year was calculated based on the 17% of teachers at school-wide administrations indicating currently teaching a student with epilepsy. The probability of a teacher not teaching a student with epilepsy in a given year is 0.83. The probability of the same teacher not teaching a student with epilepsy again the following year is $(0.83)^2$. Following this pattern, the probability of a given teacher having never taught a student with epilepsy in a given year is $(0.83)^X$, where X is the number of years of teaching experience. From this, the probability of a teacher having taught a student with epilepsy is equal to the complement of the probability of a teacher having not taught a student with epilepsy (i.e. $1 - 0.83^X$). Using this formula, the probability of a teacher having taught a student with epilepsy for each year during his or her first 10 years of teaching has been calculated (see Table 12). After seven years of teaching, the probability that a teacher would have taught a student with epilepsy is 0.728. The probability that a teacher will teach a student with epilepsy within his or her first 10 years of teaching is 0.845.

Chapter 4

DISCUSSION

Children with epilepsy represent a special group of students who may require accommodations in school to be optimally successful. It is important that teachers are aware of the possible academic consequences of epilepsy and what accommodations can and should be implemented for these students. Past research has shown that, unfortunately, this often is not the case. Teachers appear to lack important knowledge about the impact of epilepsy on children. This is even true of teachers who currently have a student with epilepsy in his or her classroom. While resources currently exist that provide information about epilepsy and its impact on children, it seems that teachers are not utilizing these resources. Knowing what sources teachers prefer to get information from is necessary to increase their use of the sources and subsequently their knowledge.

The aim of the current study was to examine if certain teacher characteristics are associated with preferred sources of epilepsy information as it pertains to students. Specific teacher variables examined included age, special education teaching status and school level. Specific sources of information examined included internet websites and parents.

Regarding the first hypothesis, about age, previous research concerning internet usage suggests that older adults may be less likely than younger adults to prefer internet sources of information for various reasons such as lack of perceived usefulness and anxiety (Zhang, 2005). Based on this finding, it was expected that older adults would be less likely than their younger colleagues to

seek epilepsy information from the internet. This expectation, however, was not confirmed. The older adults in the current study (those 56 years of age and older) were no less likely to indicate a preference for gaining information from the internet than their younger co-workers. Furthermore, it is interesting to note that no age group indicated a strong absolute preference for information from the internet. Specifically, average preferences ranged from 2.8 to 3.0 on a 5 point scale. The different outcomes between the current results and past research could be attributed to a number of factors. For example, previous studies indicating anxiety about internet usage were conducted nearly six years ago. It is likely that older adults are becoming increasingly more comfortable with the internet as they gain experience and that the six years elapsing between studies resulted in older adults less averse to internet use than would have been the case just a few years ago. Another possibility is that contemporary cohorts of older adults have more experience with the internet at a younger age leading to less anxiety and enhanced perceptions of usefulness. According to research examining older adult usage of social networking sites, the number of older adult internet users (ages 50 to 64 years) taking part in social networking sites increased from 25% to 42% between April 2009 to May 2010. This increase in internet usage by older adults may account for the similar preferences of older and younger adults for information from the internet in this study. Yet another factor that may have impacted results is the definition of the “older adults”. Previous studies have variously defined “older adults” as those 50 years and older (Zhang, 2005) and those 65 years and older (Fox, 2010). In the current study, older adults were defined as those

participants 56 years and older. It is possible that inconsistency between findings in the current and former studies is due to differences in the definition of “older adults.” Thus, a consistent definition of “older adults” may be necessary to fully understand what impact, if any, this age has on internet preferences for gaining information like that addressed in the current study.

The second hypothesis examined the preferences of teachers who work at various school levels. Previous findings have indicated that more parent-teacher trust exists at elementary school levels than at middle and high school levels (Adams & Christenson, 2000). While the current study did not measure trust between parents and teachers per se, the idea of trust nonetheless prompted the hypothesis that elementary level teachers (who may have a more trust-filled relationships with parents) are more apt to prefer to access epilepsy information directly from parents than middle and high school colleagues. This idea was partially supported by the current findings. Specifically, elementary teachers were more likely to prefer information from parents than high school teachers. However, middle school teachers were also more likely than high school teachers and no less likely than elementary school teachers to prefer information from parents. Absolute preference levels for gaining epilepsy information from parents for these three groups, however, were only moderate, ranging from 3.04 to 3.58 on a 5 point scale. The difference in preferences among these groups could be due to a number of factors, such as fewer students per teacher at the elementary level, or more parent-teacher face-to-face contact and enhanced trust when students are in elementary and middle school grades. It is possible that the

hypothesized influence of a closer parent-teacher relationship and trust in early grades lead to these results. However, the inconsistency between the current findings and previous findings might ultimately be traced to other variables which impact a teacher's choice to seek information from parents. Further research examining what variables impact whether a teacher seeks information from parents could help parents understand how to communicate with teachers about their child's epilepsy.

The third hypothesis examined teachers' special education teaching status and preference for gaining epilepsy information from parents. Communication between special education teachers and the parents of special education students has been shown to be very high (Spann, Kohler & Soenksen, 2003). This finding suggests that special education teachers may be more likely than non-special education teachers to ask parents for epilepsy information. However, this hypothesis was not supported by the current study. Current special education and non-special education teachers were equally likely to report a preference for gaining information from parents. It should be noted that the preferences for these two groups was only moderately strong (special education mean = 3.31 and non-special education mean = 3.34). In other words, neither special education nor non-special education teachers reported a strong preference that epilepsy knowledge comes from parents. A number of reasons for this unexpected finding may be possible. For example, previous studies did not compare directly teacher-parent communication for special education and non-special education teachers. While it appears that parents and teachers of special education students

communicate often, it is possible that parents and teachers of non-special education students communicate just as often. Controlling for this possibility in future studies could help tease apart this relationship. In other words, variables other than amount of communication may play a role in whether teachers prefer to consult a student's parents for information about epilepsy.

In addition to the three proposed hypotheses, preliminary analyses were conducted to examine the relationships between independent and dependent variables. These preliminary analyses resulted in some interesting additional information. The number of CTs and TiGs teaching special education were found to differ across school levels. At the middle and high school levels CTs were more likely to be current special education teachers (40.9% and 34.1%, respectively) than were CTs at the elementary level (21.4%). However, the percentage of TiGs currently teaching special education did not differ across school levels (elementary: 9.9%, middle: 9.1% and high: 11.5%). The increase in special education teachers for students with epilepsy in later school grades is likely due to increased cognitive problems over time due to medication side effects or detrimental long-term effects of seizures. Another possible explanation of this finding is increased cognitive demand associated with academic tasks in middle and high school courses. Thus, special education status and school level may have been confounded and have influenced results of the third hypotheses (i.e., regarding the preferences of special education teachers). Nonetheless, when preferences for gaining epilepsy information from parents and the internet were

compared with each other for different groups of teachers, no differences were found.

Further examination of the relationship between dependent and independent variables revealed that CTs at the elementary level were more likely than middle and high school teachers to indicate a preference for acquiring information from parents (mean = 3.88, 3.57 and 2.98, respectively).

Interestingly, this difference in preference did not exist for TiGs at each school level. In other words, TiGs at all school levels were equally likely to prefer information from parents (means: elementary = 3.48, middle = 3.44, high = 3.08).

The relationship between school level and CT status likely influenced the results for the second hypothesis (regarding preferences across grade levels). In other words, the higher preference of elementary level CTs for information from parents is likely the reason that a difference was seen across school levels.

Finally, non-special education teachers differed across school levels in their preference for information from parents. High school general education teachers were less likely than elementary and middle school general education teachers to prefer information conveyed by parents. Preference for information from parents may have been confounded by the relationship between general education teachers and school level and may help explain the results of the second hypothesis. It is important to understand each of these variables and how they influence a teacher's preference for gaining information about epilepsy and students in their classroom with epilepsy. Understanding patterns present among

these variables might ultimately help guide what resources are made available at different schools and for different types of teachers.

Teachers at the five different schools participating in the survey exhibited differences in preference for information from websites. The second, third and fifth schools surveyed indicated higher preferences for information from websites than the remaining two schools. These three schools differed in both school level and socioeconomic status (SES). Socioeconomic status was determined by the percentage of student participating in free and reduced lunches at each school from information provided by the National Center for Education Statistics website (<http://nces.ed.gov/>). School number two was a low SES elementary school, school number three was a low SES middle school and school number five was a high SES high school. The remaining two schools were a high SES elementary school and a low SES elementary school. Based on this information it is difficult to understand why these different groups of teachers preferred information from the internet at different levels. Further research examining teacher variables such as experience with the internet may improve the understanding of which teachers prefer to seek information from the internet.

There are some limitations associated with this project. The first limitation is in regard to the recruitment of participants. Teachers in general were recruited locally, including from public, private, elementary, middle and high schools. However, only five local schools were utilized. This resulted in all private school teachers falling into the elementary school level (i.e., all private school teachers were also elementary school teachers). The differences that exist

between public and private schools (e.g., class size, parent involvement) may help explain preferences of these teachers. Because of these differences it is possible that public and private school teachers would prefer different resources for epilepsy information. Another school environment which may have been influenced by the inclusion of only one school was high school. That is, the inclusion of only one high school may have provided only a limited picture of the preferences of high school teachers. It is possible that teachers at different high schools would have responded differently to the current survey due to factors such as school culture or setting. Consequently, it is impossible to understand if the differences in preference for information from parents reported by the teachers in the current study were actually due to differences in grade level or due to differences in school setting or individual school environments. Future studies should attempt to include multiple schools in each of the school levels and settings. This would allow for a better understanding of what school factors impact the preferences of teachers. Understanding these factors could help determine what resources would be most useful in the different school settings.

Another limitation involves the identification of teachers as CTs. Some CTs were identified by parents of children with epilepsy. These teachers were identified by parents of patients at an outpatient epilepsy practice in Arizona. This procedure guaranteed that these teachers were currently teaching a student diagnosed with epilepsy. However, additional CTs were self-identified through responses to a yes/no question on the survey in which they were asked if they were currently teaching a student with epilepsy or a seizure disorder. It can be

argued that identification of teachers by the parent of a child with epilepsy is a much more reliable process because it ensures that the teacher is indeed currently teaching a student diagnosed with epilepsy. Thus, this practice should be used whenever possible in future studies. If these practices were used in this study, it might have been the case that additional teachers who were unaware that one of their students had epilepsy would have been included.

A final limitation that should be addressed in future studies is the impact of previous experience teaching a student with epilepsy. In this study, participants were only asked if they were currently teaching a student with epilepsy. It is possible that those teachers labeled as TiGs had recent experience teaching a student with epilepsy. It might be true, then, that some TiGs had acquired epilepsy knowledge in the not-too-distant past in exactly the same manner hypothesized to occur among CT's in this study. If this were true, then that fact may have constrained the ability to find differences between CT's and TiG's in this study. The addition of a question regarding previous experience teaching a student with epilepsy would provide important information about the preferences of teachers who may already possess relevant knowledge.

This study provided information about which teacher characteristics are associated with preferences for information about epilepsy from two sources: parents and the internet. It is still unclear what kind of epilepsy-specific information teachers would like to obtain from different sources. It is possible that teachers prefer to get specific medical information from medical staff (such as a school nurse) and education-specific information from other school staff

(such as school psychologists or special education teachers). Further research might be conducted to understand whether considerations like this actually exist. If so, information of this type may also have an impact on what resources are made available to teachers in the future.

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Table 1

Demographic Characteristics of Current Teachers (CTs) and Teachers in General (TiGs)

Demographic	CT (N = 91)	TiG (N = 203)
Age		
< 25 years	7.8%	9.9%
26-35 years	25.5	34.7
36-45 years	22.2	16.8
46-55 years	27.8	26.7
>55 years	16.7	11.9
Gender		
Male	23.3	18.7
Female	76.6	81.3
Special Education Experience		
Some	42.4	18.7
None	58.8	81.3
Currently Teaching Special Education		
Yes	32.2	10.3
No	68.8	89.7
School Setting		
Elementary	30.7	39.9
Middle/Junior High	24.2	21.7
High	45.1	38.4
Education Level		
< Bachelor's degree	2.2	3.4
Bachelor's degree	40	40.9
Master's degree	50	50.3
>Master's degree	7.8	5.4

Table 2

Frequency and Percentage of Current Special Education Teachers and Non-Special Education Teachers Across School Levels.

School Level	Special Education	Non-special Education	N
Elementary	14 (12.8%)	95 (87.2%)	109
Middle	13 (19.7%)	53 (80.3%)	66
High	23 (19.3%)	96 (80.7%)	119

Table 3

Frequency and Percentage of Current Teachers (CTs) and Teachers in General (TiGs) Across Each School Level.

School Level	CT	TiG	N
Elementary	28 (25.7%)	81 (74.3%)	109
Middle	22 (33.3%)	44 (66.7%)	66
High	41 (34.5%)	78 (65.5%)	119

Table 4

Frequencies and Percentages of Current Teachers (CTs) and Teachers in General (TiGs) Currently Teaching Special Education or Not Teaching Special Education Across Each School Level.

School Level Group	Currently Special Education Teacher	Not Currently Special Education Teacher	N
Elementary			109
CT	6 (21.4%)	22 (78.6%)	28
TiG	8 (9.9%)	73 (90.1%)	81
Middle			66
CT	9 (40.9%)	13 (59.1%)	44
TiG	4 (9.1%)	40 (90.9%)	22
High			119
CT	14 (34.1%)	27 (65.9%)	41
TiG	9 (11.5%)	69 (88.5%)	78

Table 5

Correlations Between Number of Correct Knowledge Items and Preference for Information from Parents and Websites.

		Websites	Parents	Knowledge
Websites	Pearson	1	.023	-.112
	Correlation			
	Sig. (2-tailed)		.703	.059
	N	286	281	286
Parents	Pearson Correlation	.023	1	.033
	Sig. (2-tailed)	.703		.576
	N	281	285	285
Knowledge	Pearson Correlation	-.112	.033	1
	Sig. (2-tailed)	.059	.576	
	N	286	285	294

Table 6

Average Number of Correctly Answered Knowledge Questions on the Teacher Epilepsy Knowledge and Confidence (TEKCS) scale (Out of 25) Per School.

School	Mean	N	Std. Deviation
1	8.18	28	4.38
2	9.82	34	4.39
3	8.71	42	5.07
4	8.86	21	4.20
5	8.44	78	4.86
Total	8.73	203	4.69

Table 7

Teacher Preference for Information from Websites Across Schools.

School	Mean	N	Std. Deviation
1	2.52	25	0.96
2	2.71	34	1.03
3	2.98	41	1.11
4	2.62	21	1.02
5	2.99	77	1.12
Total	2.84	198	1.08

Note. 5 = highest level of preference; 1 = lowest level of preference.

Table 8

Teacher Preference for Information from Parents Across Schools.

School	Mean	N	Std. Deviation
1	3.67	27	0.78
2	3.36	33	1.11
3	3.44	39	1.89
4	3.43	21	1.03
5	3.08	78	1.25
Total	3.31	198	1.15

Note. 5 = highest level of preference; 1 = lowest level of preference.

Table 9

Teacher Preference for Information from Websites Across Age Groups.

Age Group	Mean	N	Std. Deviation
< 25	2.96	27	1.06
26-35	2.78	92	1.06
36-45	2.89	53	1.01
46-55	2.96	75	1.02
56+	3.00	37	1.08
Total	2.89	284	1.04

Note. 5 = highest level of preference; 1 = lowest level of preference.

Table 10

Teacher Preference for Information from Parents Across School Levels.

School Level	Mean	N	Std. Deviation
Elementary	3.58	105	0.98
Middle	3.48	62	1.02
High	3.04	118	1.19
Total	3.34	285	1.10

Note. 5 = highest level of preference; 1 = lowest level of preference.

Table 11

Current Special Education and Non-Special Education Teachers' Preference for Information from Parents.

Current Special Education Teaching Status	Mean	N	Std. Deviation
Yes	3.31	49	0.94
No	3.34	236	1.14
Total	3.34	285	1.10

Note. 5 = highest level of preference; 1 = lowest level of preference.

Table 12

Cumulative Probability of Having Taught a Student with Epilepsy During the First 10 Years of Teaching

Years of Teaching Experience	Cumulative Probability of Having Taught a Student with Epilepsy
1	.170
2	.311
3	.428
4	.525
5	.601
6	.673
7	.728
8	.775
9	.813
10	.845