Examination Family Physicians' Knowledge and Awareness of Specific Learning Disorder

Aile Hekimlerinin Özgül Öğrenme Bozukluğuna İlişkin Bilgi ve Farkındalık Düzeylerinin İncelenmesi

Esmehan ÖZER[1], Rahime Duygu TEMELTÜRK[2]

[1]Kirikkale University, Faculty of Education, Department of Special Education, Kirikkale
[2]University, Faculty of Medicine, Department of Child and Adolescent Psychiatry, Ankara

Öz

Özgül öğrenme bozukluğu (ÖÖB), bireye gerekli müdahaleler yapılmasına rağmen bireyin en az altı aydır devam eden öğrenme ve akademik becerilerini kullanmada yaşadığı güçlük olarak ifade edilmektedir. Aile hekimleri sorumluluğu altında olan hastaları tanı, tedavi, rehabilitasyon ve danışmanlık hizmetleri kapsamında bütüncül olarak ele alıp değerlendiren hekimlerdir. Dolayısıyla aile hekimlerinin kendilerine başvuran çocukların ÖÖB belirtilerini fark edip bu çocukları tanı-değerlendirme ve müdahale için yönlendirmelerinin önemli olduğu düşünülmektedir. Bu çalışmada, aile hekimlerinin ÖÖB'ye ilişkin bilgi ve farkındalık düzeylerinin incelenmesi amaçlanmaktadır. Araştırmanın amacı doğrultusunda Türkiye'nin çeşitli illerinde hizmet veren aile hekimlerine "Özgül Öğrenme Bozukluğu Bilgi ve Farkındalık Düzeyi İnceleme Anketi" araştırmacılar tarafından geliştirilerek uygulanmıştır. Veriler, elektronik ortamda 125 aile hekiminin gönüllü katılımıyla elde edilmiştir. Anket maddelerine ilişkin aile hekimlerinin verdikleri cevapların frekans ve yüzde değerleri hesaplanarak istatistiksel analizler gerçekleştirilmiştir. Araştırma bulgularına göre aile hekimlerinin ÖÖB'nin tanım, etiyoloji, yaygınlık, tanılama, değerlendirme ve müdahale süreçlerine ilişkin bilgi eksikliklerinin olduğu tespit edilmiştir. Ayrıca, aile hekimlerinin ÖÖB farkındalığının düşük olduğu, daha çok internet ve sosyal medya (Instagram/Twitter gibi) ile kitap/makaleler aracılığıyla bilgi edindikleri belirlenmiştir. ÖÖB erken tanısı ile birlikte gerekli müdahalelerin uygulanması oldukça önemlidir. Bu nedenle, aile hekimlerinin ÖÖB'li bireyleri erken çocukluk döneminde fark edip tanı-değerlendirme ve müdahale süreçlerine yönlendirebilmeleri için bilgi ve farkındalıklarının artırılmasının önemli olduğu düşülmektedir.

Anahtar Kelimeler: Aile Hekimi, Özgül Öğrenme Bozukluğu, Bilgi, Farkındalık

Abstract

Specific learning disorder (SLD) is defined as the difficulty an individual has been experiencing for at least six months in using their learning and academic skills despite appropriate interventions being provided. Family physicians are doctors who comprehensively evaluate individuals under their responsibility for diagnosis, treatment, rehabilitation, and counseling services. Therefore, it is important that family physicians notice the symptoms of SLD in children and direct them for diagnosis, evaluation, and intervention. The aim of this study was to examine the knowledge and awareness levels of family physicians about SLD. For the research, the Special Learning Disorder Knowledge and Awareness Level Questionnaire" was developed by the researchers and administered to family physicians serving in various cities in Turkey. The data were obtained with the voluntary participation of 125 family physicians in an electronic environment. Statistical analyses were conducted by calculating the frequency and percentage values of the responses given by the family physicians to the questionnaire items. According to the research findings, it was determined that family physicians have knowledge deficiencies regarding the definition, etiology, prevalence, diagnosis, evaluation, and intervention processes of SLD. Additionally, it was determined that the awareness of family physicians about SLD is low and they mostly acquire information through the internet and social media (such as Instagram/Twitter) and books/articles. It is vital to implement the necessary interventions along with the early diagnosis of SLD. Therefore, it is important to increase the knowledge and awareness of family physicians so that they can notice individuals with SLD in early childhood and direct them to the diagnosis-evaluation and intervention processes.

Keywords: Family Physician, Specific Learning Disorder, Knowledge, Awareness

Introduction

Specific Learning Disorder (SLD) is a diagnostic term employed to delineate a collective of specific learning disabilities that cannot be explained by physical, mental or neurological problems (1). SLD is defined as an individual's difficulty in learning and using academic skills, such as reading, writing, and mathematics, that persists for at least six months despite appropriate interventions in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (2). SLD is characterized by the presence of dyslexia, dysgraphia and dyscalculia together or separately. In addition to academic skills, SLD has a significant negative impact on daily activities and social areas. In addition to these difficulties experienced by individuals with SLD, 30 to 60% of these individuals have other comorbid psychiatric disorders (3,4). Attention deficit hyperactivity disorder (ADHD) is the most common comorbidity with SLD (5).

The incidence of SLD is witnessing a progressive escalation over time. According to DSM-5, the prevalence of SLD among school-age children varies between 5% and 15% (1). SLD is observed more frequently in boys compared to girls (6). However, SLD accounts for nearly half of the students with special needs in any diagnostic group in the United States of America (USA) (7), and this rate decreases to 3% in Turkey (8). The number of children with SLD in the USA is more than three times higher than that in Turkey. However, this

	ORCID No
Esmehan ÖZER	0000-0001-5919-8072
Rahime Duygu TEMELTÜRK	0000-0002-9303-5944

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Adres / Correspondence : Esmehan ÖZER
Kirikkale University, Faculty of Education, Department of Special Education, Kirikkale, Turkey
e-posta / e-mail : esmehanozer@kku.edu.tr

situation is not due to the low number of children with SLD in Turkey, but due to the fact that the diagnostic evaluation process and system is still developing (8). This development in the diagnostic-evaluation processes is expected to be further accelerated by updating and clarifying the diagnostic criteria of SLD, increasing the level of knowledge and awareness of specialists in the community (e.g. physicians, teachers), increasing the number of child and adolescent mental health and illness specialists and the number of consultations to these specialists, and the role of media/television/internet.

Child and adolescent mental practitioners working at secondary and tertiary hospitals take part in the diagnosis-evaluation processes of children with SLD in Turkey (9). For the last few years, this process has been carried out under the regulation on "Special Needs Assessment for Children (SNARC)". The medical board, recently defined as "Special Needs Report for Children", comprises specialists from various fields including child and adolescent psychiatry, pediatrics, ophthalmology, and neurology. Following the medical diagnosis, the child's educational diagnosis-evaluation process is initiated in guidance and research centers (GRCs). All these diagnostic evaluation processes should be carried out individually carefully for various reasons such as the causal disparities of SLD, the intense heterogeneity of subtypes (10).

Effective and efficient intervention programs are implemented for children with SLD to overcome their difficulties in academic skills such as reading, writing and mathematics (11). Word/reminder, repeated reading and story map strategies have been shown to be effective in developing fluent reading and reading comprehension skills of students with SLD (12). Additionally, self-management strategies are frequently used in the acquisition and development of reading comprehension skills of students with SLD (13). Self-organization strategy is generally utilized in the development of writing skills of students with SLD (14,15). Schema-based math problem solving strategy is efficient in solving math problems (16). With the intervention programs applied to children with SLD, the reading and writing skills of these students improve and their performance increases (17).

Family physicians are responsible for proving comprehensive and continuous personal preventive health services and first-step diagnosis, treatment, and rehabilitative health services to each person, without discrimination of age, gender, and disease, and who provide mobile health services when necessary (18). To put it differently, they evaluate individuals not only in the context of specific illnesses but also from a more holistic point of view. For example, they consider the risks associated with the symptoms presented by the individual (19). Given this circumstance, family physicians play important roles and responsibilities such as following and screenings related to child health (18).

To date, no study examining the knowledge and awareness levels of family physicians regarding SLD has been identified. However, for example, the level of knowledge and awareness of last year medical faculty students about autism spectrum disorder (ASD) (20), the level of knowledge of healthcare professionals about childhood ASD (21), and the awareness of healthcare professionals in family health centers about ASD (22) were examined. This study represents the initial examination in Turkey of the knowledge and awareness levels of SLD among family physicians. By employing this approach, it becomes possible to ascertain the knowledge and awareness levels of family physicians regarding SLD and to extend appropriate support to these practitioners when the need arises. Consequently, children exhibiting symptoms of SLD can be promptly referred to child and adolescent mental health outpatient clinics for early diagnosis and assessment processes, enabling timely interventions to prevent their difficulties from becoming long-lasting or permanent.

Material and Method

Design

The study was approved by the Kırıkkale University (11.01.2023, protocol number: 1/14). In this study, which aimed to examine the knowledge and awareness levels about SLD of family physicians working in various cities of Turkey, the survey method was used. Through this methodology, an endeavor was made to ascertain and define a situation that existed either in the past or continues to persist in its present state (23). In the study, data were collected using an electronic questionnaire.

Participants

The study participants consisted of 125 family physicians working in different cities of Turkey. The sample group for the study was determined using the snowball sampling method, whereby new participants are accessed through initial participants or groups of participants, thereby facilitating the expansion of the sample (24,25). Therefore, in this study, the participants were asked who else they could interview and be included in the research and proceeded. The study was naturally terminated when there were no new participants who could be asked and contacted. In this context, 125 participants were reached and the questionnaire sending process was completed. Demographic information about the participants was presented in Table 1, and information about their education and profession was presented in Table 2.

Table 1. Demographic characteristics of the participants

Characteristic (n=125)	**Result**
Age (year), mean ± Standard Deviation	38.95 ± 9.83
Gender, n (%)	
Female	81 (64.8)
Male	44 (35.2)
Having a child, n (%)	
No	41 (32.8)
Yes	84 (67.2)
An individual with SLD in familiar surroundings, n (%)	
Yes	19 (15.2)
No	84 (67.2)
I don't know	22 (17.6)
Working Institution, n (%)	
Family Health Center	94 (75.2)
Community Health Center	2 (1.6)
Integrated Hospital	29 (23.2)

Instruments

In this study, a Special Learning Disorder Knowledge and Awareness Level Examination Questionnaire" was prepared by the researchers based on a literature review to examine the knowledge and awareness levels of family physicians regarding SLD. The first section of the questionnaire consists of two sections; sociodemographic characteristics (age, gender, having a child, presence of an individual with SLD in familiar surroundings), professional characteristics (institution type, time (years) since graduation from medical faculty, the number of patients/children evaluated in a day and the age ranges of the children), and educational characteristics (the status of taking courses or training on SLD during education and professional service years). Furthermore, in this section of the questionnaire, physicians were specifically inquired about their awareness levels concerning SLD. The questions encompassed topics such as whether they had encountered any suspicion of SLD during medical examinations and the sources from which they obtained information about SLD. In the second part, in order to determine the level of knowledge of physicians, there are three items on the definition and etiology, two items on prevalence, ten items on characteristics, three items on diagnosis-assessment and intervention of SLD, and three questions to examine their awareness.

Table 2. Educational and professional characteristics of participants

Characteristic (n=125)	**Result n (%)**
The status of family physician specialty training	
Those without specialized training	40 (32)
Those with specialized training	67 (53.6)
Those with contracted family physician specialized training	18 (14.4)
Professional working duration (year)	
Total working duration after medical faculty graduation (year)	
<10	64 (51.2)
≥10	61 (48.8)
Working duration as a family physician (year)	
<5	57 (45.6)
≥5	68 (54.4)
Patient characteristics evaluated by family physicians	
The total number of patients per day	
<50	57 (45.6)
≥50	68 (54.4)
The total number of children patients per day	
0-10	43 (34.4)
11-20	42 (33.6)
>20	36 (28.8)
Suspicion of SLD in medical examinations	
Yes	57 (45.6)
No	68 (54.4)
Status of receiving training on SLD	
During medical faculty student	
Yes	48 (38.4)
No	77 (61.6)
During family physician	
Yes	14 (11.2)
No	111 (88.8)

The participants responded to the 18 questions asked to measure their level of knowledge with the options "yes, no and I do not know", while they responded to the three questions to examine the level of awareness as "strongly disagree, disagree, undecided, agree and strongly agree". While answering the question "Have you ever suspected the diagnosis of SLD during your examination before?" with the options "yes, no", they responded to the sources of information about SLD by choosing one or more of the following responses: "internet and social media (such as Instagram, Twitter), books and articles, courses/seminars/training, physician friends and through a relative/an acquaintance diagnosed with SLD". Thus, 23 questions were asked to each participant to examine their level of knowledge and awareness about SLD.

To test the content validity of the "Specific Learning Disorder Knowledge and Awareness Level Examination Questionnaire" draft form, the opinions and suggestions of three lecturers, one of whom is an expert in the fields of child and adolescent mental health, special education, and linguistics were obtained. It was evaluated whether each item of the draft questionnaire was a sufficient or an appropriate question to measure the defined behaviors (26). For example, a child and adolescent psychiatry specialist stated that the item "I try to get feedback on the child's special education process regarding SLD." which is the area of interest of child and adolescent mental health and diseases specialists, is not the responsibilities of family physicians and remains outside their borders. Therefore, this item was removed from the survey. The special education specialist stated that "The following factors play a role in the causes of SLD." would be a more suitable item instead of the item "Which factors play an important role among the causes of SLD?". As a result, the researchers reorganized the questionnaire items in the context of this and similar feedback from the experts.

In addition to content validity, face validity of the "Specific Learning Disorder Knowledge and Awareness Level Examination Questionnaire" was evaluated. In this context, the researchers sent the draft version of the questionnaire to two family physicians to examine whether the items were understandable. After this stage, the questionnaire consisting of two sections and 23 questions was finalized within the scope of the feedback from the physicians and made ready for the application. The Cronbach's Alpha reliability coefficient of the questionnaire items was calculated as .85. Since the coefficient is between 0 and 1.00 (27), the questionnaire is highly reliable.

Data Collection and Analysis

The questionnaire was sent electronically to family physicians over the internet via Google Forms. Data were collected between 16-22 January 2023. "Statistical Package for the Social Sciences (SPSS) 23" was used to analyze the data. Descriptive data were presented as number and percentage for categorical variables and mean and standard deviation for quantitative data. Thus, analyses were made with the number and percentages of the correct answers given by family physicians regarding the items in the questionnaire. The normal distribution of continuous quantitative variables was examined by Shapiro-Wilk test. In the comparison of independent groups, Mann–Whitney U-test was used when the number of groups was two and Kruskal Wallis-H test was used when the number of groups was more than two. Additionally, all the statistical tests were two-tailed with a threshold for significance of $\alpha = 0.05$.

Results

The findings obtained following the analysis of the data of this study, which aimed to examine the knowledge and awareness levels of family physicians regarding SLD, are presented under subtitles.

Participants' levels of Knowledge about Specific Learning Disorder

Table 3 shows the frequency and percentages of family physicians who responded to the questions.

The mean number of correct answers given by the participants to 18 items was calculated as 11.04±3.76. When the mean number of correct answers was compared by gender, female physicians scored 12 points while male physicians scored 11 points. The mean number of correct answers received by family physicians showed a statistically significant difference according to gender (p=0.020). However, there was no statistically significant difference in the mean number of correct answers according to whether or not having a child (p=0.226) and whether or not receiving family medicine residency training (p=0.378). Similarly, the mean number of correct answers was tested in terms of the number of patients evaluated per day (p=0.612), duration after medical faculty (p=0.680) and duration of professional working as a family physician (p=0.306) and no significant differences were found. In addition, when the mean number of correct answers was analyzed in terms of the total number of pediatric patients evaluated per day, no significant differences were found (p=0.903). On the other hand, the mean number of correct answers was compared by using Mann–Whitney U-test in terms of family physicians' received training on SLD during medical faculty years (p=0.001) and received training on SLD as a family physician (p=0.014), and significant differences were recorded.

Table 3. Findings related to participants' levels of knowledge about Specific Learning Disorder

Items Related to the Knowledge Level of SLD	n= 125		
	Yes	No	I Don't Know
	n (%)	n (%)	n (%)
Definition and Etiology			
SLD is a neurodevelopmental disorder.	87 (69.6)	15 (12.0)	23 (18.4)
The term dyslexia can be used instead of SLD. *	70 (56.0)	30 (24.0)	25 (20.0)
Both genetic and environmental factors play a role in the etiology of SLD.	119 (95.2)	3 (2.4)	3 (2.4)
Prevalence			
SLD is more common in boys than in girls.	48 (38.4)	11 (8.8)	66 (52.8)
The prevalence of SLD in school-age children is between 5 and15%.	57 (45.6)	12 (9.6)	56 (44.8)
Patient Characteristics			
Children diagnosed with SLD may have problems with speech-language skills in the preschool period.	105 (84.0)	1 (0.8)	19 (15.2)
SLD is usually diagnosed within the preschool period. *	35 (28.0)	71 (56.8)	19 (15.2)
SLD is a psychiatric disorder specific to childhood only. *	11 (8.8)	88 (70.4)	26 (20.8)
SLD is often comorbid with attention deficit hyperactivity disorder.	78 (62.4)	14 (11.2)	33 (26.4)
SLD can be treated with medication. *	17 (13.6)	76 (60.8)	32 (25.6)
Significant improvement in SLD symptoms can be achieved with early diagnosis and intervention program/special education.	117 (93.6)	0 (0.0)	8 (6.4)
There are subtypes of SLD.	95 (76.0)	1 (0.8)	29 (23.2)
Individuals with SLD may have special abilities and skills.	99 (79.2)	4 (3.2)	22 (17.6)
Individuals with SLD usually have below-average intelligence. *	10 (8.0)	89 (71.2)	26 (20.8)
Individuals with SLD often have difficulties in academic skills.	84 (67.2)	14 (11.2)	27 (21.6)
Items Related to Diagnosis, Assessment and Intervention Processes			
Neurologists make the diagnosis of SLD. *	20 (16.0)	75 (60.0)	30 (24.0)
EEG (electroencephalogram) and/or neuroimaging should be performed to confirm the diagnosis of SLD. *	28 (22.4)	46 (36.8)	51 (40.8)
Some children with SLD spontaneously overcome their reading difficulties over time without any intervention. *	53 (42.4)	41 (32.8)	31 (24.8)

*Items having "No" as the correct answer

Awareness Levels of Participants about Specific Learning Disorder

Table 4 shows the frequency and percentages of family physicians who answered the questions. Of 125 participants, 62% (n=78) of them disagreed, 24% (n=30) of them strongly disagreed with the item "I think the knowledge I have about SLD is sufficient". For the item "Awareness of SLD is low among family physicians.", 50% (n=63) of family physicians agreed, 18% (n=33) strongly agreed, and 25% (n=31) were undecided. The item "I think I will benefit from trainings on SLD." agreed by 38% (n=47) of family physicians and 56% (n=70) strongly agreed.

When family physicians' suspicions of SLD during the examination was analyzed, 55% (n=68) did not experience such a suspicion. In addition, the sources of information on SLD reported by the physicians are shown in Figure 1 as percentages (%). Among family physicians, 63 (50%) stated that they obtained information about SLD from the internet and social media (such as Instagram/Twitter), 55 (44%) from books/articles, 48 (26%) from courses-seminars-trainings, 48 (26%) from physician friends and 10 (8%) through a relative/acquaintance with SLD.

Table 4. Findings related to participants' awareness of Specific Learning Disorder

Items Related to SLD Awareness Level (n=125)	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
	n (%)	n (%)	n (%)	n (%)	n (%)
I think that my knowledge about SLD is sufficient.	30 (24)	78 (62.4)	10 (8)	6 (4.8)	1(0.8)
Awareness of SLD is low among family physicians.	1 (0.8)	7 (5.6)	31 (24.8)	63 (50.4)	23 (18.4)
I think I will benefit from training on SLD.	2 (1.6)	1 (0.8)	5 (4)	47 (37.6)	70 (56)

Discussion

The aim of this study was to determine the level of knowledge and awareness of family physicians in Turkey regarding SLD. In the context of the results obtained, family physicians have a lack of knowledge or confusion, especially in some items related to SLD. In this context, more than half of the family physicians responded correctly to the incorrect statement "The concept of dyslexia can also be used instead of SLD", while some of them answered "I don't know". However, SLD is an umbrella disorder and is characterized by the presence of reading (dyslexia), written expression (dysgraphia), and math (dyscalculia) disorders together or separately (2). In this context, it can be

said that family physicians need various information such as what kind of a disorder SLD is, what its subtypes are, and what kind of heterogeneity it may exhibit.

There are several family physicians who answered "I don't know" and "incorrect" to the item "SLD is more common in boys than in girls" in the questionnaire. However, SLD is a disorder seen more frequently in boys than in girls (6). In addition, family physicians gave many "incorrect" and "I don't know" answers to the item "The prevalence of SLD in school-age children is between 5 and15%". However, according to DSM-5, the prevalence of SLD among school-age children varies between 5% and 15% (1). Since the diagnosis-assessment processes and systems for children with SLD are still developing in Turkey, this rate is as low as 3% (8). Therefore, family physicians may have lack of knowledge on the items related to the definition, etiology, and prevalence of SLD.

Regarding the diagnosis, assessment and intervention processes of SLD, some of the family physicians gave the correct answer to the incorrect statement "EEG and/or neuroimaging should be performed to confirm the diagnosis of SLD". In addition, most participants have inaccurate and incomplete information on the item "Some children with SLD overcome their reading difficulties spontaneously over time without any intervention". However, there are appropriate intervention programs to increase the performance levels of children with SLD by improving their academic skills such as reading (12,13), writing (14,15) and mathematics (16). In addition, a study carried out in Turkey a few years ago reported that intervention programs for children with SLD, especially for their reading and writing skills, were effective (17).

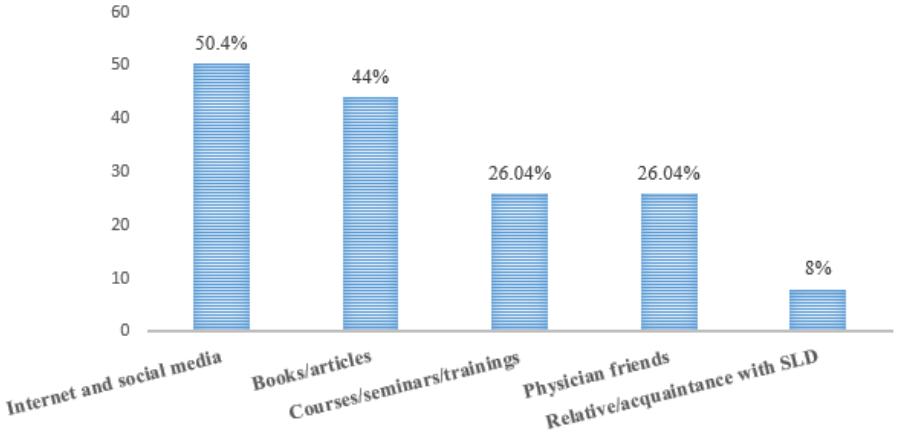

Figure 1. Sources of information on Specific Learning Disorder stated by family physicians

When the knowledge levels of family physicians regarding SLD were examined according to gender, having children, and having family physician residency training, the knowledge levels were statistically significantly different only according to gender. This result is consistent with the result (28) that female family physicians and pediatricians provide more guidance than males in cases of developmental delay in children. Similarly, the mean number of correct answers showed statistically significant differences in the cases in which family physicians received training on SLD in medical faculty and received training on SLD during their working as family physicians. In this context, family physicians can be included in training programs on SLD with a multidisciplinary approach in pre-graduation medical education curricula and in-service training programs when they start working.

When the answers given by the family physicians to the items related to the awareness of SLD are examined, the awareness level is not sufficient, and the sources of information are mostly the internet and social media (such as Instagram/Twitter) and books/articles. Therefore, participants' levels of awareness of SLD is low and their level of knowledge is insufficient. Within this context, the knowledge and awareness of physicians can be enhanced through educational and professional training programs tailored for family physicians. It is important for family physicians to recognize children with SLD at an early stage and direct them to the child and adolescent psychiatry outpatient clinics for the assessment and intervention processes with accurate information obtained from reliable sources. Thus, physicians will be able to carry out primary care diagnosis, treatment, rehabilitation, and counseling services as a whole (18,19).

In this study, the knowledge and awareness levels of family physicians about SLD were determined with a single measurement tool. In future, studies reaching more participants with more than one and standardized assessment tools can be planned. Mixed method studies with qualitative data can be carried out. On the other hand, family physicians can be included in an in-service training

programme on SLD and their knowledge and awareness levels can be re-evaluated.

Conclusion

According to the results of this study, most of the family physicians stated that there were no individuals with SLD in their familiar surroundings, that they did not suspect SLD during the medical examinations, and that they did not receive any training on SLD during their medical faculty years as well as working as family physicians. The knowledge and awareness levels of family physicians regarding Specific Learning Disorder (SLD) exhibit certain limitations. It is crucial to increase the knowledge and awareness of family physicians to recognize individuals with SLD in early childhood and guide them to diagnosis-assessment and intervention processes. In conclusion, both courses on SLD should be included in the medical faculty curriculum and informative in-service training on SLD should be organized for family physicians serving in the field. In addition, legal regulations can be made to enable family physicians, special educators, and child and adolescent mental health specialists to work together.

Conflict of interest statement

The authors have no conflicts of interest regarding this study.

Ethics Committee Approval: The study was approved by the Kırıkkale University (11.01.2023, protocol number: 1/14).

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