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Erken Çocukluk Eğitimcilerinin Otizm Spektrum Bozukluğu Hakkındaki Bilgi Düzeyleri
Early Childhood Educators' Knowledge of Autism Spectrum Disorder

Büşra Vural Şenel [1*], Fethiye Kılıçaslan [2]

[*1] Harran University, Şanlıurfa Vocational School of Social Sciences, Department of Child Development, Şanlıurfa, Türkiye, busravural91@gmail.com, ORCID: 0000-0001-8541-4867

[2] Harran University, Faculty of Medicine, Department of Child and Adolescent Psychiatry, Şanlıurfa, Türkiye, fethiyeklcaslan@gmail.com, ORCID: 0000-0002-8131-8859

ÖZET

Amaç: Bu çalışmanın amacı, erken çocukluk eğitimcilerinin otizm spektrum bozuklukları (OSB) hakkındaki bilgi düzeylerini incelemektir. Bu kapsamda, eğitimcilerin OSB ile ilgili bilgi sorularına nasıl yanıt verdiklerini araştırmak ve bilgi düzeylerinin çeşitli demografik ve mesleki değişkenlere göre farklılık gösterip göstermediğini belirlemek amaçlanmıştır.

Materyal ve Metot: Bu çalışma, Türkiye'nin Güneydoğu Bölgesinde bulunan Şanlıurfa'da yürütülmüştür. Çalışmanın katılımcılarını, anaokullarında aktif olarak görev yapan 104 erken çocukluk eğitimcisi oluşturmuştur. Veriler, "Sosyodemografik Bilgi Formu" ve "Çocukluk Otizmi Bilgi Anketi (ÇOBA)" kullanılarak toplanmıştır. Veri analizi SPSS 24.0 istatistik programı ile yapılmıştır.

Bulgular: Çalışmaya katılan erken çocukluk eğitimcilerinin ÇOBA puan ortalaması 19,99 ± 5,77 olarak bulunmuştur. Çalışma, erken çocukluk eğitimcilerinin OSB hakkındaki genel bilgi düzeylerinin orta seviyede olduğunu göstermiştir; eğitimcilerin tanı zamanı ve gözlemlenebilir davranışlar konusunda güçlü bir anlayışa sahip oldukları, ancak sosyal iletişim ve etkileşim konularında belirgin bilgi eksiklikleri olduğu tespit edilmiştir. OSB eğitimi almış veya bilgilerini yeterli olarak algılayan eğitimciler, anlamlı derecede daha yüksek puan almıştır. Demografik faktörler veya otizmle kişisel deneyim açısından OSB bilgisinde anlamlı bir fark bulunmamıştır.

Tartışma ve Sonuç: Bu çalışma, erken çocukluk eğitimcilerinin OSB konusundaki bilgi düzeylerini incelemiş ve katılımcıların bilgi seviyesinin orta düzeyde olduğunu ortaya koymuştur. Bilgi düzeyini en çok etkileyen faktörler, formal OSB eğitimi almak ve kendi bilgilerini yeterli olarak algılamak iken, demografik faktörlerin etkisi bulunmamıştır. Bulgular, özellikle sosyal iletişim ve etkileşim konularında hedeflenmiş hizmet içi eğitim programlarının önemini vurgulamaktadır. Sonuç olarak, erken tanı ve uygun müdahaleyi desteklemek için öğretmenlerin OSB farkındalığı ve bilgi düzeylerinin artırılması önerilmektedir.

Anahtar Kelimeler: Otizm spektrum bozukluk, Çocukluk otizmi, Erken çocukluk, Okul öncesi, Anaokulu

ABSTRACT

Objective: This study examines the level of knowledge among early childhood educators about autism spectrum disorders (ASD). Specifically, the study aims to explore how educators respond to ASD-related knowledge questions and to determine whether their levels of knowledge differ across various demographic and professional variables.

Material and Methods: This descriptive survey study was conducted in the Southeastern region of Türkiye, Şanlıurfa. The study participants were 104 early childhood educators who took an active role in the kindergartens. It was collected using the "Sociodemographic Information Form" and the "Childhood Autism Knowledge Questionnaire: CAKQ". The data analysis was conducted using SPSS 24.0.

Results: The points averages of the early childhood educators attending the study were 19,99 ± 5,77 on the CAKQ. The study found that early childhood educators' overall knowledge of ASD was moderate, with strong understanding of diagnostic timing and observable behaviors but notable gaps in social communication and interaction. Educators who had received formal ASD training or perceived their knowledge as sufficient scored significantly higher. No significant differences were found in demographic factors or in personal experience with autism.

Discussion and Conclusion: There has been a statistically significant relationship between receiving autism training, perceived sufficient knowledge, and knowledge levels about childhood autism ($p<0.05$). According to our study, early childhood educators who did not receive any training need to participate in in-service training programs to enhance their knowledge and competence regarding ASD.

Keywords: Autism spectrum disorders, Childhood autism, Early Childhood, Preschool, Kindergarten

Sorumlu Yazar/Corresponding Author: Büşra Vural Şenel, Harran University, Şanlıurfa Vocational School of Social Sciences, Department of Child Development, Şanlıurfa, Türkiye, busravural91@gmail.com, ORCID: 0000-0001-8541-4867

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that emerges in early childhood and is characterized by difficulties in social communication and interaction, along with restricted and repetitive behaviors (1). The term "spectrum" is used because symptom severity and functional impairment vary widely among individuals. While some individuals can lead independent lives, others may require intensive support (2). ASD is a lifelong condition that significantly affects an individual's cognitive and social abilities. Although symptoms typically appear in early childhood, some cases are diagnosed late. The American Academy of Pediatrics recommends screening for autism symptoms between 18 and 24 months of age (3). However, there is still no biological marker for autism, and diagnosis is made through observation and clinical evaluation (4). When examining the epidemiological data on ASD, it appears to be insufficient at this stage.

The global prevalence of ASD has been increasing recently. Although studies on its prevalence in the general population report varying rates, it is generally estimated that approximately 1 in every 100 individuals worldwide is affected by autism spectrum disorders (2). ASD is diagnosed about four times more frequently in males than in females (5, 6). Although the exact cause of this difference is unknown, genetic and hormonal factors are believed to play a role. Despite being a lifelong disorder, research has shown that early detection and appropriate medical care can improve long-term outcomes for individuals with ASD. Early intervention programs can help support language development, social skills, and cognitive abilities (4). Therefore, early identification of ASD symptoms and the implementation of appropriate educational and behavioral therapies are of great importance.

Early diagnosis and intervention play a crucial role in enhancing the quality of life and maximizing the developmental potential of individuals with ASD. Numerous studies have emphasized that well-structured early intervention programs can lead to significant improvements, particularly in social communication, language development, and cognitive abilities (4,7). Although the symptoms of ASD often emerge the diagnostic process is frequently delayed, even though symptoms are observable at an early age within the first three years of life. This delay is not limited to low- and middle-income countries but is also commonly reported in developed nations (5, 6, 8). Delayed diagnosis deprives children of timely supportive interventions during critical neurodevelopmental periods, leading to missed developmental opportunities in the long term. The knowledge and awareness levels of parents and field experts become increasingly significant in the early diagnosis process of autism.

Studies conducted in Türkiye indicate that healthcare professionals (9-12), parents (13, 14), and teachers (15-17) generally have insufficient levels of knowledge regarding ASD.

In Türkiye, the importance of early recognition is amplified by the growing prevalence of ASD and the rising number of children included in mainstream classrooms through inclusive education policies (18). The success of such inclusion depends primarily on teachers' preparedness and competence. In this context, the role of early childhood educators—who are in direct and continuous interaction with children during their earliest years—has become increasingly significant. They occupy a pivotal role, as they are often the first professionals to observe developmental differences. Their ability to identify early signs of ASD and make timely referrals directly influences children's access to diagnostic and intervention services. Studies focus on preservice teachers' knowledge (19, 20); preschool teachers' perspectives on autism (21); preschool teachers' inclusion experiences (22-24); and preschool teachers' knowledge levels (15-17, 25, 26).

Research examining early childhood educators' knowledge levels in the Southeastern region of Türkiye remains limited. A previous study (27) examining children applying for special needs reports in Şanlıurfa found that teachers play a significant role in identifying children's psychological and developmental difficulties. In a study covering 600 cases, 9,2% (n=55) of applications to the health board were initiated by teachers, highlighting their pivotal but insufficient position in detecting early signs of disorders (27). Given the unique cultural and educational context of this region, this study is needed to understand better educators' profiles and their knowledge and training needs. Addressing knowledge gaps in this area is essential not only for educational purposes but also for broader societal outcomes and for advancing more equitable, inclusive, and responsive educational environments for children with autism.

The objective of this study is to examine the level of knowledge about ASD among early childhood educators. The study aims to explore how educators respond to ASD-related knowledge questions and to determine whether their knowledge levels differ across various demographic and professional variables. To ascertain the answers to the subsequent inquiries:

1. What is the level of knowledge of autism spectrum disorders among early childhood educators?
2. How do early childhood educators respond to the autism spectrum disorder knowledge questions?
3. Do early childhood educators' levels of knowledge about autism spectrum disorders differ according to demographic and professional variables; gender, years of experience, type of institution, field of education, having an individual with autism in

the family or social environment, prior knowledge of autism screening programs, training on ASD, and self-perceived knowledge about ASD?

MATERIALS AND METHODS

Research Design

This research employed a descriptive survey design to examine early childhood educators' knowledge of ASD. The descriptive survey method is widely used in research to collect detailed information from a specific population to describe existing conditions, opinions, or behaviors in their natural context. According to Fraenkel and Wallen (28), survey designs are particularly effective for collecting data on participants' views on a particular issue or phenomenon, including their knowledge, interests, skills, competencies, and attitudes. In the present study, a survey design was used to collect quantitative data on early childhood educators' knowledge of autism spectrum disorders.

Participants

The study initially involved 132 early childhood educators who voluntarily agreed to participate; however, 28 practitioners were excluded from the analysis due to incomplete questionnaire responses, resulting in a final sample of 104 participants. The participants were accessed through a snowball sampling method, starting with a familiar group of preschool teachers. Snowball sampling is a non-probability sampling technique in which existing study participants recruit future participants from among their acquaintances, thereby expanding the sample through social networks and referrals (29). In this study, teachers shared the survey link in their school WhatsApp groups, facilitating its further distribution. Additionally, some participants served as intermediaries to reach early childhood educators across different schools, enabling a wider, more diverse sample. This approach enabled the researchers to effectively identify and recruit participants who met the study criteria while maintaining a practical, flexible data-collection process.

A total of one hundred and four (104) early childhood educators participated in the study. Of these, 94 (89,3%) were females and 10 (9,7%) were males. The mean age of the participants was 28,05 ± 7,06 years. The average length of working life was 5,44± 4,9 years. Additional sociodemographic characteristics of the participants are presented in Table 1.

Table 1. Characteristics of the participants.

Variables		n	%
Sex	Female	94	%89,3
	Male	10	%9,7
Age	Young adult (18-25)	45	%43,3
	Early adulthood (26-35)	41	%39,4
	Middle age (36–45)	18	%17,3
Marital status	Married	45	%43,3
	Not married	58	%55,8
	Divorced	1	%1
Status of having a child	Yes	37	%35,4
	No	67	%64,4
Education field	Preschool education	46	%44,2
	Child development	47	%45,2
	Others	11	%10,6
Education status	Associate degree	40	%38,4
	Undergraduate	57	%54,8
	Master/Ph.D	7	%6,7
Years of experience as an early childhood educator	1-5 years	60	%57,6
	6-10 years	24	%23
	11-15 years	13	%12,5
	15-20 years	7	%6,7
Type of the school	Public kindergarten	44	%42,3
	Private kindergarten (Affiliated with the Ministry of National Education)	18	%11,5
	Private kindergarten (Affiliated with the Ministry of Family and Social Services)	42	%41
The presence of individuals with autism in the school or surrounding environment.	Yes	39	%37,5
	No	65	%62,5
The presence of children diagnosed with autism enrolled in the school.	Yes	46	%44,2
	No	42	%40,4
	Unknown	16	%15,4
Having received any training on ASD	Yes	29	%29,9
	No	75	%72,1
Having knowledge about the Autism Screening and Follow-up Program	Yes	21	%20,2
	No	83	%79,8
Having a child you suspected might have ASD	Yes	69	%66,3
	No	35	%33,7
If you suspected, what was your response	I didn't take any action because I was afraid of the family's reaction	13	%12,5
	I adviced to the family	37	%35,4
	I referred the child to a pediatrician	13	%12,5
	I referred the child to a child psychiatrist	35	%33,7
Providing training for families about autism in the institution	Yes	19	%18,3
	No	85	%81,7
Self-assessment of knowledge on autism	Considered insufficient	24	%23
	Neither sufficient nor insufficient	48	%46,1
	Considered sufficient	32	%30

The participants were employed in both public (44%) and private schools (56%) in Şanlıurfa, Karaköprü. Most educators (54,8%) held undergraduate degrees, primarily in child development (45,2%) and preschool education (44,2%), indicating an academic background in early childhood education. Since not all participants held a degree in preschool education, in this study the staff working with children in public and private schools were collectively

referred to as 'Early Childhood Educators'. They are professionals who work directly in educational and care settings, including preschool teachers and teaching assistants.

Early childhood educators' ages ranged mainly from 18–45 years, with 43,3% classified as young adults (18–25), 39,4% as early adulthood (26–35), and 17,3% as middle age (36–45). Their professional experience ranged from 1 to 20 years, with 57,6% having 1–5 years, reflecting diversity in both age and teaching tenure. Regarding experience with children with special needs, 37,5% of the participants reported having students with ASD in their immediate environment, and 44,2% indicated that their schools had children diagnosed with autism. In response to suspected ASD cases, 35,4% reported advising families, 33,7% referred the child to a child psychiatrist, and 12,5% referred them to a pediatrician. Moreover, 18,3% of the participants stated that their institutions provided training for families about autism. While only 29,9% had received any training on ASD and 20,2% were familiar with the Autism Screening and Follow-up Program, the majority rated their knowledge on autism as moderate (46,1%), insufficient (23%) or sufficient (30%) demonstrating varying levels of perceived knowledge about ASD. This demographic and professional profile provides a comprehensive context for understanding the participants' knowledge levels.

Measurement Tools

To ensure a systematic evaluation of participants' background characteristics and knowledge of autism spectrum disorders, two data collection instruments were developed and administered. Details regarding each measurement tool are presented below.

Sociodemographic Information Form: A sociodemographic information form developed by the researchers was used to collect data on participants' sociodemographic characteristics. The form included questions on age, gender, marital status, educational status, total years of professional experience, and participation in autism-related training programs. In addition, it included items on the presence of an individual with ASD in the family or social environment and participants' knowledge of autism screening programs.

Childhood Autism Knowledge Questionnaire (CAKQ): It was developed for this study by reviewing the relevant literature and the DSM-5 diagnostic criteria (1). The tool consists of 32 items presented in a three-option format ("True," "False," "I don't know"). The items are organized into four principal domains: social communication and interaction characteristics (Questions 2, 3, 5, 8, 9, 15, 16, 17, 20, 21, 22, 25, 29, 30, 31, 32), language characteristics (Questions 4, 6), repetitive behaviors, restricted interests, and sensory sensitivities (Questions 10, 13, 14, 19, 23, 27, 28), and the nature of autism, diagnostic timing, and possible

comorbidities (Questions 1, 7, 11, 12, 18, 24, 26). Some items were reverse scored (Questions 15, 16, 17, 18, 20, 21, 22, 24, 25, 26, 29, 30, 31, 32). Correct responses were assigned 1 point, while incorrect and "I don't know" responses were scored as 0. Higher total scores indicated greater knowledge about childhood autism.

Data Collection

The research data were collected between July and August 2025. The data collection process was conducted online to ensure accessibility and convenience for the participants. The questionnaire forms were prepared using Google Forms and distributed to the participants electronically. Early childhood educators were invited to participate voluntarily, and informed consent was obtained prior to data collection. Participants were provided with clear information about the purpose and scope of the study, as well as assurances regarding the confidentiality and anonymity of their responses.

To facilitate participation, the survey link was shared through professional communication channels, including teacher WhatsApp groups and personal networks. Participants were asked to complete the questionnaire individually at their convenience. The online format not only increased the study's accessibility but also reduced time and logistical constraints. Data were automatically recorded through the Google Forms platform, reducing the potential for human error during data entry and ensuring the accuracy and completeness of responses.

Ethical Considerations

Ethical approval for the study was obtained from the Harran University Social and Human Sciences Research Ethics Committee (Research Code: XXX). The ethics committee confirmed the appropriateness of the research before data collection. No identifying personal information was collected, and all responses were recorded anonymously using coded forms to ensure confidentiality and data security. The research instruments contained no items that could cause discomfort or compromise participants' safety. Participants were entitled to refuse to participate or withdraw from the study at any time without negative consequences.

Data Analysis

Prior to analysis, all collected data were carefully reviewed to ensure accuracy and completeness. The responses were exported from Google Forms to Microsoft Excel for preliminary screening. Incomplete or inconsistent responses were identified and excluded from the dataset. Data were then coded and organized for statistical analysis. Each participant was

assigned a unique identification code to maintain anonymity and facilitate secure data management. Following data cleaning, the finalized dataset was imported into the Statistical Package for the Social Sciences (SPSS) for further analysis.

The data were analyzed using SPSS version 20.0 (IBM Corp., Armonk, NY, USA). Normality of the data distribution was assessed using the Shapiro–Wilk and Kolmogorov–Smirnov tests. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the participants' characteristics. Since the data did not meet the assumption of normality, nonparametric tests were employed. The Mann–Whitney U test was used for two-group comparisons, and the Kruskal–Wallis test was used for comparisons involving more than two groups. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Results About the Total Autism Knowledge Among Early Childhood Educators

The results of participants' total autism knowledge, as measured by the CAKQ, are presented in Table 2.

Table 2. The total autism knowledge among early childhood educators.

	N	Mean	SD	Min	Max
The total autism knowledge score	104	19,99	5,77	4	32

The findings presented in Table 2 indicate the overall level of autism knowledge among early childhood educators as measured by the CAKQ. The mean score, standard deviation, and minimum and maximum scores are reported to provide a comprehensive overview of the knowledge of 104 participants. The results show that, on average, educators demonstrated a moderate level of understanding of autism spectrum disorders, with some variation across individuals. The range between the minimum and maximum scores suggests that while some participants possess substantial knowledge, others may have limited familiarity with childhood autism.

Results About the Early Childhood Educators' Knowledge of ASD

The distribution of participants' responses to the CAKQ questions is presented in Table 3.

Table 3. Question-based knowledge levels of early childhood educators about autism.

Questions		n	%
1. Is early diagnosis important in the treatment of autism?	Yes	101	97,1
	No	1	1
	I don't know	2	1,9
2. Children with autism experience loss of interest in their surroundings.	True	92	88,5
	False	7	6,7
	I don't know	5	4,8
3. Children with autism sometimes get lost in thought.	True	95	91,3
	False	3	2,9
	I don't know	6	5,8
4. In an autistic child, there is a delay or complete lack of development in speech.	True	93	89,4
	False	5	4,8
	I don't know	6	5,8
5. Children with autism cannot maintain eye contact (looking into your eyes) for more than a few seconds.	True	93	89,4
	False	6	5,8
	I don't know	5	4,8
6. Children with autism may appear deaf or mute.	True	67	64,4
	False	13	12,5
	I don't know	24	23,1
7. When the time comes, children with autism can walk.	True	78	75
	False	5	4,8
	I don't know	21	20,2
8. Those around a child with autism, worry that the child doesn't hear well.	True	84	80,8
	False	5	4,8
	I don't know	15	14,4
9. Children with autism cannot develop friendships appropriate for their developmental age.	True	89	85,6
	False	7	6,7
	I don't know	8	7,7
10. Children with autism may have abnormal eating habits.	True	65	62,5
	False	6	5,8
	I don't know	33	31,7
11. Autism spectrum disorder can be associated with mental disability.	True	51	49
	False	24	23,1
	I don't know	29	27,9
12. Autism spectrum disorder can be associated with giftedness.	True	52	50
	False	22	21,1
	I don't know	30	28,9
13. Children with autism have an excessive preoccupation with parts of objects.	True	88	84,6
	False	4	3,8
	I don't know	12	11,5
14. Children with autism cannot play with toys appropriate for their developmental age.	True	56	53,8
	False	29	27,9
	I don't know	19	18,3
15. Children with autism also look at what those around them are looking at.	True	52	50
	False	26	25
	I don't know	26	25
16. Children with autism enjoy being swung, bounced on knees, or playing similar games.	True	74	71,2
	False	14	13,5
	I don't know	16	15,4
17. Children with autism react when called by name.	True	23	22,1
	False	63	60,6
	I don't know	18	17,3
18. The cause of autism is related to a broken family (divorced/one parent deceased).	True	14	13,5
	False	63	60,6
	I don't know	27	26

19. Children with autism can be extremely disturbed by certain sounds.	True	95	91,3
	False	0	0
	I don't know	9	8,7
20. When looked at or laughed at, children with autism also laugh or imitate.	True	31	29,8
	False	52	50
	I don't know	21	20,2
21. They enjoy peek-a-boo.	True	37	35,6
	False	34	32,7
	I don't know	33	31,7
22. They try to attract the attention of those around them.	True	43	41,3
	False	35	33,7
	I don't know	26	25
23. Children with autism have stereotyped and repetitive movements (such as flapping or bending hands or fingers).	True	89	85,6
	False	3	2,9
	I don't know	12	11,5
24. Children with autism cannot be diagnosed before the age of four.	True	12	11,5
	False	67	64,4
	I don't know	25	24
25. When an object (e.g., a toy) is pointed at or shown, they look at the object.	True	30	28,8
	False	57	54,8
	I don't know	17	16,3
26. Autism can be treated with diet-based therapies.	True	16	15,4
	False	57	54,8
	I don't know	31	29,8
27. Children with autism have insensitivity to pain/heat, and excessive interest/disinterest in specific sounds, smells, and light.	True	76	73,1
	False	12	11,5
	I don't know	16	15,4
28. Children with autism are excessively interested in grouping objects (by color, size, shape).	True	68	65,4
	False	12	11,5
	I don't know	24	23,1
29. They can create and play imaginary scenarios (e.g., picking up the phone and talking as if someone is on the other end, or pretending to change a doll's diaper).	True	31	29,8
	False	43	41,3
	I don't know	30	28,8
30. They point with their index finger at something they are curious about (to ask).	True	57	54,8
	False	19	18,3
	I don't know	28	26,9
31. They point with their index finger to indicate that something has caught their attention.	True	56	53,8
	False	17	16,3
	I don't know	31	29,8
32. They deliver things (like objects or toys) to others to show them.	True	51	49
	False	24	23,1
	I don't know	29	27,9

Table 3 presents participants' responses to 32 different questions, which are grouped into four domains; social communication and interaction characteristics (Questions 2, 3, 5, 8, 9, 15, 16, 17, 20, 21, 22, 25, 29, 30, 31, 32), language characteristics (Questions 4, 6), repetitive behaviors, restricted interests, and sensory sensitivities (Questions 10, 13, 14, 19, 23, 27, 28),

and the nature of autism, diagnostic timing, and possible comorbidities (Questions 1, 7, 11, 12, 18, 24, 26). As shown in Table 3, participants demonstrated a strong understanding of diagnostic timing (Question 1, 97.1% correct). In contrast, questions addressing the relationship between autism and intellectual disability or giftedness (Questions 11 and 12) were answered correctly by only about half of the participants. This discrepancy suggests limited awareness of autism's diversity and characteristics.

The analysis of participants' responses revealed several key patterns. Regarding questions on social communication and interaction, 7 out of 16 items were answered incorrectly by the majority of participants (Questions 15, 16, 21, 22, 30, 31, 32). Additionally, Questions 20 and 29 were answered incorrectly by nearly half of the participants, indicating significant knowledge gaps in this domain. Participants generally recognized the classical observable signs of autism, such as difficulties with attention, eye contact, social smiling, sensory sensitivities, and repetitive behaviors. For instance, a high proportion of participants correctly identified hypersensitivity to sounds (Question 19, 91.3% correct) and stereotypic movements (Question 23, 85.6% correct).

These findings indicate that while participants can identify fundamental and observable signs of autism, they show considerable knowledge gaps in social communication, and interaction characteristics. As a result, it can be concluded that early childhood educators' knowledge about childhood autism varies across different dimensions, suggesting the need for targeted in-service training programs that emphasize areas with lower knowledge levels, particularly in social communication, and interaction characteristics of autism.

Results About the Factors Affecting Total Score of Autism Knowledge

The findings regarding early childhood educators' CAKQ total scores and their relationships with various demographic and ASD-related variables are presented in Table 4.

Table 4. Factors Affecting Total Score of CAKQ

Variables		***M***	***SD***	***p***
Getting any training on ASD	Yes	22.86	4.8	*0.001
	No	18.88	5.8	
Perceived knowledge on ASD	Insufficient	17.42	6.2	**0.004
	Neither sufficient nor insufficient	19.58	5.5	
	Sufficient	22.53	5.5	

*Mann-Whitney U Test; **Kruskal-Wallis Test

According to Table 4, no statistically significant differences were found in CAKQ total scores with respect to gender, years of experience, type of institution, field of education, having an

individual with autism in the family or social environment and prior knowledge of autism screening programs (p>0.05). The mean CAKQ scores were significantly higher among participants who had previously received any ASD training than among those who had not (p=0.001). Similarly, participants who reported that they considered their knowledge about ASD sufficient scored significantly higher on the CAKQ than those who did not (p=0.004).
As a result, it was determined that participants who had received training on ASD demonstrated significantly higher levels of knowledge about childhood autism compared to those who had not received any training. Furthermore, participants who perceived their knowledge of ASD as sufficient had objectively higher knowledge levels, indicating consistency between perceived and actual knowledge.

DISCUSSION

The present study aimed to examine early childhood educators' knowledge of ASD and the factors affecting their knowledge levels. In this study, the knowledge levels of early childhood educators were evaluated using the CAKQ. In this study, the knowledge levels of early childhood educators were evaluated using the CAKQ. In this study, the mean CAKQ score of 104 kindergarten educators was 19,99 ± 5,77, indicating a moderate level. Recent studies conducted in Türkiye also suggest that early childhood educators' knowledge about ASD is ranking limited to moderate. For example, a study (25) considers the knowledge levels of preschool teachers as one of the variables of their research in İzmir. This research showed that preschool teachers' overall knowledge levels about ASD were found to be moderate, with notable gaps particularly in early symptom recognition and intervention strategies. Another study in Aksaray (26), evaluated the knowledge and awareness levels of 226 preschool teachers and 82 guidance counselors found that teachers lacked sufficient knowledge about the core symptoms of ASD and often held misconceptions or biases based on misinformation.
Similarly, Rakap et al. (16) reported that general and preschool teacher candidates across 12 cities and different school types had insufficient understanding of ASD characteristics and intervention practices, stressing the urgent need for targeted professional training. More recently, Sakallı and Tuncer (17) found that among preschools, primary schools, and special education teachers, some demonstrated basic familiarity with ASD, only about one-fifth rated their knowledge as sufficient, and most expressed inadequacy in classroom practice. Across these studies, limited knowledge of childhood autism indicates the need for systematic preservice and in-service training to strengthen teachers' capacity to contribute to early identification and inclusive education, as enhancing teachers' awareness and competence

regarding childhood autism could improve early identification and referral processes (30). These descriptive studies offer a foundational perspective on the current knowledge levels, which can inform professional programs for early childhood educators.

The present study also aimed to examine early childhood educators' knowledge of ASD with 32 questions across the four domains by the CAKQ. The relatively high accuracy rate on questions about diagnostic timing suggests that educators have a general awareness of when autism can be identified. However, misconceptions persist regarding the relationship between autism, intellectual disability, and giftedness. Studies conducted in Türkiye have reported similar findings, indicating that misinformation and prejudices about autism are widespread among preschool teachers (26). Such misconceptions may hinder the effective implementation of inclusive educational practices and negatively influence teachers' expectations and interactions with children on the spectrum.

In this study, the findings revealed that while preschool teachers demonstrated a strong understanding of the more observable and natural features of autism—such as repetitive behaviors, sensory sensitivities, and difficulties with eye contact—they showed significant gaps in their knowledge of the social communication and interaction characteristics of autism. This pattern is consistent with previous research (31), indicating that preschool teachers often have a stronger understanding of nature of autism but demonstrate significant gaps in recognizing the social communication and interaction characteristics. Many teachers can identify typical child development milestones but struggle with accurately identifying or understanding the nuanced social and communicative deficits associated with autism, which may hinder early detection and intervention (26,32,33).

These knowledge gaps are frequently attributed to a lack of specialized training or practical exposure to children with autism during both pre-service and in-service education (34,35). Studies indicate that teachers who receive formal training in autism or inclusive education are better equipped to identify early signs of ASD and implement appropriate classroom strategies, and professional development programs have been shown to improve teachers' knowledge, beliefs, and self-efficacy regarding autism (34). The moderate levels of knowledge observed in this study highlight the need for targeted educational interventions. Specifically, in-service training programs focusing on dimensions with lower scores, such as social communication and interaction characteristics, may enhance early childhood educators' ability to observe, recognize, and appropriately refer children at risk for ASD. Strengthening educators' knowledge in these areas is essential for supporting early diagnosis, providing effective classroom support, and collaborating with families and healthcare professionals. In

the literature, training programs designed to increase educators' knowledge about autism spectrum disorder generally emphasize areas such as social communication characteristics of ASD, (36) and stereotypical, ritualistic behaviors and comorbidities (26). Some studies also focus on equipping educators with practical skills to manage challenging behaviors (37). Such comprehensive training approaches have been shown to enhance educators' confidence, sensitivity to early signs of ASD, and overall effectiveness in supporting children on the spectrum.

The study also found that training on ASD and self-perceived knowledge significantly influenced CAKQ total scores. Participants who had received any training on ASD scored higher than those who had not, highlighting the positive effect of professional development and in-service education on early childhood educators' understanding of autism. Results from another study (25) indicate that teachers who had received prior training in special education, possessed higher educational qualifications. Similarly, Bağcı et al. (15) conducted research in Ankara and found participants who had received ASD-related training had higher ASD knowledge scores. These findings collectively suggest that training programs play a crucial role in enhancing educators' knowledge of ASD. In this study, participants who considered their knowledge about ASD sufficient demonstrated higher objective knowledge levels, indicating a correspondence between perceived and actual knowledge. Bağcı et al. (15) showed that in contrast to preschool teachers, only a small proportion of school counseling teachers considered themselves competent in identifying and supporting children with ASD, highlighting significant gaps in practical knowledge. These findings highlight the importance of targeted professional development programs that enhance educators' confidence and competence. Providing structured training that combines theoretical knowledge with practical strategies can bridge the gap between perceived and actual competence.

No significant relationships were identified between CAKQ scores and demographic variables such as gender or having an individual with autism in the family or social environment. However, some studies in the literature have reported different results. Regarding teachers, the literature has reported varying results regarding the relationship between demographic variables and autism knowledge. For example, some studies have found that teachers' autism knowledge is not significantly associated with demographic factors such as gender, age, education level, or personal experience with individuals with autism (35). Conversely, some studies have indicated that teachers' autism knowledge may be related to factors such as higher education level, more professional experience, or direct contact with children with autism (32). These findings suggest that professional training and practical experience, rather than

demographic characteristics, play a more critical role in increasing teachers' knowledge and awareness of autism. The present study concluded that early childhood practitioners' knowledge about childhood autism was primarily influenced by receiving formal training on ASD and perceiving themselves as sufficiently informed, rather than by demographic or experiential factors. This finding suggests that formal training and exposure to educational resources may play a more critical role than personal or demographic factors in shaping early childhood educators' knowledge of ASD.

CONCLUSION

The findings of this study revealed that early childhood educators' knowledge about ASD was at a moderate level. Considering that one of the most critical factors influencing the prognosis of ASD is early diagnosis and timely intervention, teachers and teacher assistants working in early childhood settings must have sufficient knowledge and awareness of autism. Preschool teachers play a key role in recognizing early symptoms, observing children's behavioral and developmental characteristics, and referring them to appropriate specialists when necessary. The study also showed that teachers who had received training on ASD or perceived their knowledge as sufficient demonstrated significantly higher levels of knowledge. However, no significant relationships were found between knowledge levels and certain demographic variables such as gender, having an individual with autism in the social environment.

In line with these findings, it is recommended that early childhood educators be provided with structured, continuous in-service training programs to enhance their understanding of autism and strengthen their ability to identify and support children with ASD, particularly in social communication and interaction. Practical workshops, case-based learning, and collaboration with special education experts could enhance teachers' diagnostic sensitivity and confidence in supporting children with ASD in early childhood settings. Additionally, incorporating autism-related courses or modules into university teacher education curricula may help future educators acquire the competencies needed for early recognition and intervention. Increasing teachers' awareness and practical knowledge about ASD is crucial not only for improving early diagnosis but also for supporting the educational and social development of children with autism throughout their schooling process. Furthermore, considering that Turkish rural culture tends to be more interdependent than urban culture, children with ASD in rural areas face additional cultural barriers (38). Therefore, conducting in-depth qualitative research in this context is particularly important for understanding how contextual factors shape educators'

knowledge and practices related to ASD, and for informing region-specific training and policy development efforts.

Scientific Responsibility Statement

Both authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation and writing.

Ethics Approval and Consent

This study was conducted in accordance with the principles of the Declaration of Helsinki, following approval from the Harran University Social and Human Sciences Research Ethics Committee (Date: 16.06.2025, approval number: 2025/211). All teachers participating in the study were informed and an informed consent form was filled.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Author Contributions

The first researcher contributed to data collection from teachers and took the lead in organizing and writing the manuscript. The second researcher, an expert in autism, contributed to developing the survey questions and to interpreting and writing the sections related to autism. Both authors reviewed and approved the final version of the article.

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