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Analysis of pediatricians' knowledge about autism

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Abstract

Background/Aim: In autism spectrum disorders (ASD), early diagnosis is important for treatment, and pediatricians are health professionals who are likely to encounter ASD at the earliest stages. In this study, we aimed to examine the information sources of pediatricians, their current knowledge about autism and the affecting factors.

Methods: The study was conducted as an online cross-sectional self-report questionnaire and the data of 145 pediatricians were analyzed. The sociodemographic information form created by the researchers and the Healthcare Professionals' Knowledge of Childhood Autism Questionnaire-Turkish Version were filled by the participants. Correct response rates were divided into quantile values and under 3rd Quartile (Q3) was considered "insufficient information." Logistic regression analysis was used for descriptive data and factors affecting the level of knowledge.

Results: Of 145 participants, 59.3% completed Child and Adolescent Psychiatry (CAP) internship during their medical education, 60.7% completed CAP rotation, and 49.7% attended training or meetings related to autism. The highest rate of correct answers in autism knowledge evaluation questionnaire was on "Information on social interaction," while the lowest rate of correct answers was on "Information on neurodevelopmental diseases." For the total correct answer rates, the Q3 and Q1 values were 68.1% and 89.5%, respectively. According to the logistic regression model, being single (Mean: 3.60) and not having an MCS rotation (Mean: 8.49) predicted a score below Q3.

Conclusions: Our research shows that in this disorder, where early diagnosis is of foremost importance, pediatricians who regularly monitor children have a high level of knowledge about recognizing autistic symptoms; however, there are some deficiencies in answering questions that will resolve the concerns of families about autism. For this reason, pediatricians who examine a child at least 3-4 times a year need pediatric psychiatry training that will give them specific skills in diagnosing and making recommendations, as well as initiating interventions. Another option is being more involved in departments that will enable them to gain experience in autism.

Keywords: Autism, Child psychiatry, Pediatrician

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Introduction

The evaluation of children with autism spectrum disorder (ASD) is a data collection process performed to determine the problems experienced by the child, and the interventions required to eliminate such problems [1]. It further aims to find the strengths and weaknesses of the child and any accompanying developmental or mental disabilities, assess the family's needs, and identify resources to meet them [2].

Screening evaluations are made among preschool children to identify and become aware of those with inadequate social adjustment and those at increased risk of experiencing inadequate social adjustment. Diagnostic evaluation aids in deciding the cause of a disease more intensely compared to screening. In Turkey, the evaluation and diagnosis process in the medical, psycho-social, and educational fields are used to individually analyze the developmental weaknesses and strengths, and interests of children with autism and other special needs. Early diagnosis of all neurodevelopmental disorders is of foremost importance in terms of early initiation of special-education programs. The literature review has shown that a reliable diagnosis for children with autism can be established at about 30 months of age, and autism-related screenings can be performed at 18 months at the earliest [3].

Children's developmental problems are first noticed by the parents. They start to seek service on the matters they are concerned about or in areas where their children have weaknesses [4]. In a study involving 42 parents from Italy, parents' perspectives towards the diagnosis of autism were evaluated and 71% of the parents, who participated in the study, stated that they first recognized the autism symptoms of their children at the age of two whereas the remaining one-third stated that they noticed symptoms when their children were aged three to four years. Only one mother said she noticed that her child had symptoms from birth. In the study, all parents stated that their children had difficulties in four areas in total: Language, social relationship, behavior, and motor skills. Most parents consulted experts when they realized these symptoms to clarify their child's situation or obtain information about the process. Only two parents did not want their child's situation to be clarified. Half of the mothers were observed to request a diagnostic evaluation and further examination for their child's condition, without guidance by any specialist whereas other families acted in line with the suggestions of teachers or other professionals. In the study, 50% of the parents obtained detailed information about special education centers and various application programs after their children were diagnosed [5]. In another study investigating the experiences of mothers of children diagnosed with ASD, mothers expressed their opinions specifically on three issues during the evaluation process and mentioned their initial concerns about the development and behavior of their children. The parents' concerns were mostly caused by uncertainties and continued in the second pregnancy. However, mothers said that they shared these concerns about their children with their doctors or family physicians, but they did not refer them to a physician specializing in diagnosing and treating children with ASD. Many parents expressed that they felt lonely in deciding where to go to receive services and which educational services would be more appropriate for their children. Parents further stated that they needed to be informed and supported about interventions and practices for their children diagnosed with ASD [6].

Families start a search after realizing the different behaviors of their children. It is a known fact that the sooner children diagnosed with autism are intervened, the more successful the results. There are no reliable biomarkers or specialized laboratory tests to diagnose autism and clinical observation is still the gold standard for diagnosis [7], making the knowledge and experience of doctors about autism especially important. In the American Academy of Pediatrics (AAP) Autism Guidelines of 2006-2007, the importance of including routine autism screening in pediatric applications is underlined [8].

In a study on the role of pediatricians in the evaluation of children with autism, in which parents' opinions were sought, how pediatricians' approaches to the concerns of parents affected the evaluation process and parents' views on the importance of interaction between parents and pediatricians were investigated. The interviews revealed that the relationship between parents and pediatricians was multifaceted or complex and would make a significant contribution to early or late diagnosis of ASD [9].

Pediatricians and family physicians are often the first healthcare professionals to encounter children with symptoms associated with developmental disorders such as autism. In other words, pediatricians are the first individuals with whom the parents share their concerns about their child's development. Therefore, the attitudes of pediatricians have a prominent place in the early diagnosis and treatment of a severe and chronic problem with a lifelong impact such as autism [10]. Unfortunately, the diagnosis and treatment of developmental problems are not clearly included in the education of pediatricians. Moreover, since the department of pediatric mental health and diseases is not present in all medical faculties located in Turkey, the education of medical faculty students regarding pediatric psychiatry remains insufficient. Only some of the students of the faculties with the department of pediatric mental health and diseases receive relatively adequate pediatric psychiatry training. As a result, some of the physicians graduate without learning about autism, which progresses with severe developmental problems when not diagnosed in the initial period by a pediatric psychiatrist [11]. Therefore, it is believed that pediatricians do not have adequate information about autism symptoms and do not know which strategies to use in their treatment and how to guide children, particularly those with severe autism symptoms [12].

This study aimed to examine pediatricians' sources of information on autism and their current knowledge.

Materials and methods

This study was designed as a cross-sectional self-report questionnaire-based internet study and conducted between 21–28 October 2020. The population of the study consisted of pediatricians. The data were collected using Google Forms questionnaires (Google, California, USA) sent to the smartphones of volunteer physicians, who were reached from hospital databases and research groups. A total of 151 physicians answered the questionnaire, 145 of which (96.0%) completed it.

Sociodemographic data

This form was created by the researchers. It includes questions about pediatricians' age, sex, marital status, professional experience, and possible sources of information about autism.

Knowledge about Childhood Autism among Health Workers questionnaire (KCAHW) - Turkish version

This questionnaire, which was developed by Bakare et al. [13], consists of 19 questions about the four domains of autism. The first domain consists of eight items and concerns the impairment in social interaction observed in children with autism. The second domain consists of a single item, symptoms related to communication and language development. The third domain consists of four items indicating the obsessive and compulsive, repeating, and stereotypical symptoms observed in autism. The fourth domain consists of six items and questions whether autism is a neurodevelopmental disorder, examines possible comorbid conditions, and explores the ages at which it occurs. The possible total score that can be received from the questionnaire ranges from 0 to 19. Each item is answered as "yes," "no," or "I don't know." Correct answers receive 1 point, and the other answers receive 0. The last item questions the age of onset of autism and is scored as zero for neonatal age or infancy, and one for childhood. It is completed within 10 minutes on average. Özgür et al. [14] conducted the Turkish validity and reliability study of the scale.

Statistical analysis

Statistical analysis was performed using SPSS version 22.0 software. Results were expressed as mean (standard deviation), median (minimum-maximum), and number (%) for ease of understanding. Visual (histogram and probability graphs) and analytical (Kolmogorov-Smirnov, Shapiro-Wilk tests) methods were used to determine whether the variables followed a normal distribution. In regression analysis, the total of confirmatory answers was divided into quartiles. Logistic regression analysis was performed with retrospective elimination method to predict the group considered unsuccessful (below Q3). A *P*-value of <0.05 was considered statistically significant.

Results

The data of 145 participants were analyzed in the study. The mean age was 35.4 years. Of the participants, 79.3% were females and 70.3% were married. Table 1 shows the sociodemographic variables.

Table 1: Sociodemographic variables

Study parameter		Mean (SD) (n=145)
Age		35.4 (6.1)
Sex	Male	20.7% (n=30)
	Female	79.3% (n=115)
Marital Status	Single	29.7% (n=43)
	Married	70.3% (n=102)
Professional Experience	0–5 years	53.8% (n=78)
	6–10 years	23.4% (n=34)
	11–20 years	17.9% (n=26)
	>20 years	4.8% (n=7)

Among all, 59.3% of the participants completed a child and adolescent psychiatry (CAP) internship during their medical education, 60.7% completed a CAP rotation and 49.7% attended trainings or meetings in this field. Sources of information about ASD are presented in Table 2.

Table 2: Sources of information about ASD

Study Parameter		(n=145)
Did you complete a child and adolescent psychiatry internship during your medical education?	Yes	59.3% (n=86)
	No	40.7% (n=59)
Did you attend a child and adolescent psychiatry rotation during your residency	Yes	60.7% (n=88)
	No	39.3% (n=57)
Did you attend a training or meeting on autism spectrum disorder?	Yes	49.7% (n=72)
	No	50.3% (n=73)

The results of the KCAHW questionnaire showed that the questions about social interaction (8 questions) were mostly answered correctly while the questions about neurodevelopmental disorders (6 questions) were given the most wrong answers. Table 3 shows the results of the KCAHW questionnaire.

When the rate of answering each question was examined, the most correctly answered questions were those related to social interaction, and the questions related to "mental retardation accompanying autism", "epilepsy accompanying autism" and "autism onset" were answered wrongly the most. Table 4 shows the correct answer rates for the questions.

Table 3: The results of the KCAHW questionnaire

Study parameter	Rates of correct answers (%)	Score Median (min-max)
Information on social interaction (8 questions)	89.3	7 (4–8)
Information on language and communication problems (1 question)	85.5	1 (0–1)
Information on repeating or restricted interest symptoms (4 questions)	82.2	4 (0–4)
Information on neurodevelopmental disorders (6 questions)	58.7	4 (0–5)
Total (19 questions)	77.7	15 (9–19)

Table 4: Rates of correctly answered questing (%)

Question	Rates of correct answering (%)	n
Marked impairment in non-verbal behaviors during social interaction.	99.3	144
Failure to develop peer relationships appropriate for developmental age.	98.6	143
Lack of social and emotional reciprocity.	97.6	142
Loss of interest in the environment and surroundings.	97.2	141
Stereotypical or repetitive movements.	97.2	141
Persistent preoccupation with parts of objects.	91.7	133
The child can appear as if deaf or dumb.	87.6	127
Delay or total lack of development of spoken language.	85.5	124
A social smile is usually absent in a child with autism.	83.4	121
Lack of spontaneous will to share enjoyment, interest, or activities with other people.	80.0	116
Autism is a childhood schizophrenia.	79.3	115
There may be abnormal eating habits.	72.4	105
Staring into open space and not focusing on anything specific.	70.4	102
Autism is a neurodevelopmental disorder.	68.3	99
Autism is an autoimmune condition.	67.6	98
Love for regimented routine activities.	66.9	97
Autism may be accompanied by mental retardation.	49.7	72
Autism may be accompanied by epilepsy.	42.1	61
The onset of autism is usually in childhood.	42.1	61

For the total correct answer rates, the Q3 and Q1 values were 68.1% and 89.5%, respectively. Accordingly, logistic regression analysis using the backward-elimination method performed with sociodemographic and education-related data to determine the factors affecting scoring below Q3 showed that the model was significant (X: 39.053, *P*=0.001) and explained 39.1% of the group in the fourth step. According to the remaining variables in the fourth step, being single (OR: 3.60) and not performing a CAP rotation (OR: 8.49) predicted scores below Q3 (sensitivity 53.8%, specificity: 99.2%). Table 5 summarizes the logistic regression model.

Table 5: Logistic regression model to determine the factors that affect scoring below Q3

Study parameter	χ^2	R^2	B	SE	*P*-value	OR	95% CI
Model	39.053	0.391					
Being single			1.281	0.607	0.035	3.600	1.100–111.834
Not attending a CAP rotation			2.139	1.147	0.042	8.491	1.012–80.429

In the first step, age, sex, marital status, professional experience, and sources of information are added. The fourth step is shown. SE: Standard error, OR: Odds Ratio, CI: Confidence interval

Discussion

The present study included a total of 145 pediatricians. The mean age of the sample was 35.4 years, and most participants were females.

The rate of correct answers to the questions about the core symptoms of autism (e.g., language and communication problems, social interaction, repeating symptoms, and limited area of interest) was high, while questions about neurodevelopmental diseases (causes of illness or concomitant illnesses) were mostly answered wrongly. Similar to the results of our study, a study conducted in the United States reported that 82% of pediatricians performed routine screening in children with developmental retardations and that 50% of children undergoing screening were evaluated with the Denver-II developmental test. However, the authors suggested that although there were many scanning and diagnostic tools developed for young children with ASD, there was still a delay in the early diagnosis [15]. In a study conducted by interviewing parents, pediatricians' approach towards parents' anxieties and concerns was reported to affect the diagnostic process and the interaction between parents and pediatricians was of immense importance. The authors reported that parents' negative experiences with pediatricians negatively affected their approach to the issue and that even if not intentionally, it increased the parent's sense of denial or rejection, causing a delay in the diagnosis. On the other hand, all parents stated that they trusted their pediatricians for the accuracy of the information about the health and development of their children and that they would like to be informed not only about ASD, but also on the causes of ASD and its treatment [9]. In another study published in 2011, interviews were made with the parents of children with ASD and parents reported that pediatricians did not want to talk to them about autism. In parallel with this result, mothers stated that they shared their concerns about the development and behavior of their children with their pediatricians, but their pediatricians did not refer them to a specialist. They further stated that their pediatricians provided information related to various health problems seen in early childhood, irritability, retardation in motor development, and sensory sensitivity [6]. In a study investigating the opinions and experiences of physicians, pediatricians stated that they did not feel comfortable when they established a diagnosis without consulting a specialist experienced in autism [16]. All these findings suggest that pediatricians are successful in identifying problems in children, but they lack information, which has been previously suggested but now begins to lose their validity, regarding the issues specific to autism, matters of concern to families, or issues related to the causes of autism. In fact, along with pediatricians, physicians working in other branches dealing with autism have difficulties in keeping up with the latest information about autism. In a study investigating the adaptation of French psychiatrists to changes made to the Diagnostic and Statistical Manual of Mental Disorders (DSM) classification system and diagnostic criteria, psychiatrists resisted adaptation to the relevant changes but were willing to acquire information sources for the new system and receive training on this subject [10].

A remarkable finding of the present study was that pediatricians' knowledge about the core symptoms of autism was mostly accurate. In a study from Turkey published in 2010, it was reported that more than 60% of pediatricians informed the parents of children with autism and pervasive developmental disorder (PDD) that their children's development was normal, and only 4% of the children were referred to a child psychiatry clinic due to symptoms of autism or PDD although they were followed regularly by pediatricians, between four to twenty-four times in the past year [11]. Although the rates of pediatricians referring their patients to a specialist were not investigated in the present study, this finding suggests that the knowledge of pediatricians about autism in Turkey has gradually increased within the last decade.

The further analyses performed in the present study have shown that being single and not receiving CAP rotation during residency predict that pediatricians' knowledge of autism is inadequate. In a study investigating the experiences and opinions of pediatricians involved in the diagnosis process of children with ASD, diagnosing a child was very difficult due to several reasons. Physicians stated that one of these reasons was that they did not receive sufficient training on ASD in medical faculties and during their residency. Secondly, they stated that they did not have sufficient time and opportunity to attend in-service training or meetings to obtain information about the diagnosis of children with ASD [16]. In another study from Turkey, specialists mentioned that they were having difficulties due to problems such as insufficiency of the duration for the diagnosis, lack of biological marker in the diagnosis, lack of following the neuro-motor development of the child, insufficiency of the special education services for the children with autism, the commercialization of the foundations giving education services in autism, and lack of informing the parents about autism [17]. Although several standards were introduced in the USA in 2001 for early recognition of developmental problems, no decrease was observed in the age of diagnosis in 2006, bringing up the issue that physicians could not receive sufficient information on this subject during their medical education [11]. The present study has shown that gaining experience in autism during a specific education on child health is more important.

This study has several limitations. First, although the knowledge of pediatricians on autism was measured, no information could be obtained about referring patients, making recommendations, and interventions performed. There is a need for further studies evaluating these parameters together.

Limitations

Our sampling strategy could be biased due to the hospital databases and research groups in which the questionnaire was posted. The sample was not fully representative, because most physicians were recruited from secondary and tertiary hospitals. The second limitation is our sample size, which limits the generalization of the results to all

countries. Further research in this area should address these issues and clarify these factors**.**

Conclusion

The results of this study have shown that pediatricians, who regularly monitor children, have a high level of knowledge about recognizing the symptoms of autism, a disorder in which early diagnosis is of great importance, whereas they have some deficiencies in answering questions that will eliminate families' concerns about autism. Therefore, pediatricians who see the child at least three to four times a year need pediatric psychiatry training that will ensure them to gain specific skills in diagnosing, making recommendations and initiating interventions outside of their specialization. The other option is being more involved in departments that will enable them to gain experience in autism.

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