Original Article / Özgün Araştırma

Meandros Med Dent J
doi:10.4274/meandros.galenos.2023.92678
Meandros Med Dent J 2023;24(1):85-92
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Autism Spectrum Disorder Knowledge Among Family Medicine Residents in Izmir, Turkey

İzmir İlinde Aile Hekimliği Uzmanlık Öğrencilerinin Otizm Spektrum Bozukluğu Hakkında Bilgi Düzeyi

Adli Başar Gürbüz[1], Özge Tuncer[2], Börte Gürbüz Özgür[3]

[1]İzmir Karabağlar Bahçelievler Family Health Center No. 13, İzmir, Turkey
[2]University of Health Sciences Turkey, İzmir Bozyaka Research and Training Hospital, Clinic of Family Medicine, İzmir, Turkey
[3]Aydın Adnan Menderes University Faculty of Medicine, Department of Child and Adolescent Psychiatry, Aydın, Turkey

Abstract

Objective: Today, there are initiatives worldwide for the early diagnosis of autism spectrum disorder (ASD). Family physicians encounter children with autism risk from their infancy. The aim of this study was to determine the knowledge and factors affecting the knowledge about ASD of family medicine residents.

Materials and Methods: Knowledge about Childhood Autism among Health Workers (KCAHW) questionnaire and the sociodemographic data form were applied to 210 family medicine residents in İzmir, Turkey.

Results: One hundred thirty-three (63.3%) participants were female. The mean KCAHW score was 12.3±3.15. The mean scores for domains 1, 2, 3 and 4 were; 5.8±1.56, 0.82±0.38, 2.51±1.06 and 3.16±1.45, respectively. Variables that increase the level of knowledge were determined as prior follow-up and/or participation in the evaluation process of a child with ASD, ASD training during residency, and having medical specialty residency experience in another branch before.

Conclusion: It was determined that family medicine residents had deficiencies in knowledge about ASD. Besides, the most important factors that increase knowledge about ASD were previous training about ASD and having previously followed-up patients with ASD. We think that adding a theoretical course on autism and following up a child with ASD with a child psychiatrist during the residency training process will contribute to the level of knowledge.

Keywords: Family practice, knowledge, autism spectrum disorder, awareness, medical residency

Öz

Amaç: Günümüzde tüm dünyada otizm spektrum bozukluğunun (OSB) erken teşhisi için girişimler vardır. Aile hekimleri, otizm riski olan çocuklarla bebeklik döneminden itibaren karşılaşmaktadır. Bu çalışmanın amacı, aile hekimliği asistanlarının OSB hakkındaki bilgi düzeyini ve bilgilerini etkileyen faktörleri belirlemektir.

Gereç ve Yöntemler: İzmir'de 210 aile hekimliği asistanına Sağlık Çalışanlarının Çocukluk Çağı Otizmi Hakkında Bilgi Anketi (SÇ-OBA) ve sosyodemografik veri formu uygulanmıştır.

Bulgular: Katılımcıların 133'ü (%63,3) kadındı. Ortalama SÇ-OBA puanı 12,3±3,15 idi. SÇ-OBA anketinin alan 1, 2, 3 ve 4 için ortalama puanları sırasıyla 5,8±1,56, 0,82±0,38, 2,51±1,06 ve 3,16±1,45 idi. Bilgi düzeyini artıran değişkenler OSB'li hastaları daha önce takip etmek ve/veya değerlendirme sürecinde olmak, asistanlığı sırasında OSB eğitimi almak ve daha önce başka bir branşta uzmanlık asistanlığı deneyimine sahip olmak olarak belirlendi.

Sonuç: Aile hekimliği asistanlarının OSB hakkında bilgi eksiklikleri olduğu belirlendi. Ayrıca OSB hakkında bilgi birikimini artıran en önemli faktörlerin daha önce OSB ile ilgili eğitim almış olmak ve daha önce OSB olan bir hastayı takip etmiş olmak olduğu belirlendi. Asistanlık eğitimi sürecinde otizme yönelik teorik dersin işlenmesinin ve çocuk psikiyatristi ile otizm hastası takip etmenin bilgi düzeyine katkı sağlayacağını düşünmekteyiz.

Anahtar Kelimeler: Aile hekimliği, bilgi düzeyi, otizm spektrum bozukluğu, farkındalık, tıp asistanlığı

Address for Correspondence/Yazışma Adresi: Assoc. Prof. Börte Gürbüz Özgür, Aydın Adnan Menderes University Faculty of Medicine, Department of Child and Adolescent Psychiatry, Aydın, Turkey
Phone: +90 533 620 00 48 **E-mail:** borte.gurbuz@adu.edu.tr
ORCID ID: orcid.org/0000-0002-9176-7359

Received/Geliş Tarihi: 09.08.2022
Accepted/Kabul Tarihi: 04.03.2023

Introduction

Autism spectrum disorder (ASD) is a life-long neurodevelopmental disorder whose symptoms begin at the early stages of life, characterized by limitations in social and emotional relationships, insufficiency in communication skills, stereotypical odd behaviors and limited interest areas (1). ASD is an important public health issue due to its prevalence. Although there is no autism-specific treatment today, there is an increasing number of studies which show that early diagnosis and beginning special education and behavioral interventions as early as possible are the most important factors which positively influence ASD prognosis and allow some patients to be excluded from the diagnosis (2,3).

It has been reported that children with ASD who are diagnosed and begin a special education program before the age of four have better cognitive functions, more developed adaptation behaviors and functionality, less ASD related symptoms and more language development (4,5). However, since there is 10 times more risk of having ASD for younger siblings of children diagnosed with ASD, early diagnosis of ASD is important in terms of genetics consultancy as well (6). The most important stage for diagnosis of ASD in a child is to recognize the symptoms and suspect ASD. Therefore, health workers such as family physicians, pediatricians, otorhinolaryngology specialists and nurses having a high level of knowledge and awareness about ASD may have significant contributions to early diagnosis.

In a recent meta-analysis involving the data of a total of 40 different countries in which 56 studies were included, the average diagnosis age was reported as 60.48 months. As a result of this data, it was underlined that efforts to lower the diagnosis age needs to be increased (7).

Diagnosis is generally put as parents observe that their child has different characteristics from other children, when there is speech delay in the child or when the child does not respond when spoken to and parents take the child to a physician with the thought that there might be hearing loss and the physician suspects ASD (8). In the light of these data, the need to carry out studies on health workers' awareness and knowledge about onset of autism. Many studies report that the number of health workers who have a high chance of coming across children under risk for ASD is not at a sufficient level in terms of knowledge on autism (9-12).

It was aimed in this study to determine the knowledge of family medicine residency students about ASD and the parameters that may be related to the level of ASD knowledge by using an objective measuring scale.

Materials and Methods

The study was carried out in line with the Helsinki Declaration. The ethics committee approval of the study was given by University of Health Science Turkey, Bozyaka Training and Research Hospital Clinical Research ethics committee (decision number: 01, date: 12.06.2019). The study and the procedure was explained in detail to all of the volunteers who participated in the study and their consent was taken.

This study, which was designed as a cross-sectional type, was carried out in the city of Izmir, in universities and training and research hospitals which provide family medicine residency education, between the dates 1.4.2019-1.10.2019. According to data from December 2018, a total of 241 individuals undergoing Family Medicine specialization training within the province of İzmir were identified. The study included all individuals within this population, and 87.5% of the participants, a total of 210 individuals, were reached and surveyed. The data form which included sociodemographic data and variables which can influence knowledge level on autism prepared by the researcher and the Knowledge about Childhood Autism among Health Workers (KCAHW) questionnaire were applied to the participants face to face.

KCAHW questionnaire developed by Bakare et al. (13) consists of 19 questions. The survey which is used to measure the knowledge of health workers on autism evaluates 4 domains: (1) impairments in social interaction, (2) development of communication and language, (3) repetitive and stereotypical behaviors, (4) comorbid situations and emergence age period. The total score received from the survey varies between 0 and 19. The answers are graded as I do not know, yes and no. Turkish validity and reliability study was conducted by Gürbüz Özgür et al. (14).

Statistical Analysis

The data of the subjects were evaluated with the SPSS 17.0 (Chicago, IL, USA) software for Windows. The descriptive data were indicated as average, standard deviation, number, percentage, median and 25-75 percentile. The suitability for normal distribution was evaluated with the Shapiro-Wilk test. Non-parametric tests, including Mann-Whitney U for comparing two groups and Kruskal-Wallis tests for comparing three or more groups, were utilized. The relationship between two variables was determined with the Spearman correlation test. For statistical significance, p-value was accepted as lower than 0.05.

Results

Out of the 210 participants, 133 (63.3%) were female and 77 (36.7%) were male. The mean age of all participants was 31.65±7.36 years. The data related to the variables on the participants' sociodemographic characteristics and knowledge level on autism are given in Table 1.

The mean KCAHW total score of all participants was 12.3±3.15. The mean scores received from the domains were successively: domain 1: 5.8±1.56; domain 2: 0.82±0.38; domain 3: 2.51±1.06; domain 4: 3.16±1.45. The comparison of the domains and total scores between the groups in terms of various variables are shown in Table 2. The distribution of

Table 1. Sociodemographic characteristics of the participants		
Variables		**n (%)**
Gender	Female	133 (63.3)
	Male	77 (36.7)
Marital status	Married/with a partner	111 (54.4)
	Single/lives alone	87 (42.6)
	Divorced/widowed	6 (2.9)
Previous training of specialization in medicine	Yes	17 (8.1)
	No	193 (91.9)
Income-expense status	My income is much below my expenses	23 (11.2)
	My income is a little below my expenses	33 (16.1)
	My income and expenses are equal	89 (43.4)
	My income is a little higher than my expenses	57 (27.8)
	My income is much higher than my expenses	3 (1.5)
Work experience in a mental health clinic	Yes	24 (11.5)
	No	184 (88.5)
Completion of a child psychiatry internship during medical school	Yes	97 (46.2)
	No	113 (53.8)
Completion of a child psychiatry internship during family medicine residency	Yes	7 (3.3)
	No	203 (96.7)
Participation in the evaluation process of a child diagnosed with autism	Yes	36 (17.1)
	No	173 (82.4)
	Non-response	1 (0.5)
Parenting a child with autism diagnosis	Yes	1 (0.5)
	No	210 (99.5)
Parenting a child with a chronic illness or special needs	Yes	3 (1.4)
	No	206 (98.6)
Close association with an individual diagnosed with autism	Yes	36 (17.1)
	No	173 (82.8)
Prior follow-up of a patient with autism diagnosis	Yes	37 (17.6)
	No	173 (82.4)
Completion of autism training program	Yes	65 (31)
	No	145 (69)
Familiarity with the autism screening and follow-up program implemented by the Ministry of Health	Yes	91 (43.3)
	No	117 (55.7)
	Non-response	2 (1)

Table 2. Comparison results of KCAHW domains and total scores in terms of variables[†]

		Domain 1 score		Domain 2 score		Domain 3 score		Domain 4 score		Total score	
		Median (25-75 p)	p-value	Median (25-75 p)	p-value	Median (25-75 p)	p-value	Median (25-75 p)	p-value	Median (25-75 p)	p-value
Gender	Female	6 (5-7)	0.43	1 (1-1)	0.87	3 (2-3)	0.72	3 (2-4)	0.1	13 (10-14)	0.47
	Male	7 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (11-14)	
Previous training on autism	Yes	7 (6-7)	<0.01	1 (1-1)	0.01	3 (2-3)	0.18	3 (3-4)	0.27	14 (12-15)	<0.01
	No	6 (5-7)		1 (1-1)		2 (2-3)		3 (2-4)		12 (10-14)	
Autism training during residency	Yes	7 (6-7)	0.03	1 (1-1)	0.73	3 (2-3)	0.42	4 (2-5)	0.14	15 (12-16)	0.02
	No	6 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (11-14)	
Prior follow-up of a patient diagnosed with autism	Yes	7 (6-7)	0.001	1 (1-1)	0.03	3 (2-3)	0.06	4 (3-5)	0.01	14 (13-15)	<0.001
	No	6 (5-7)		1 (1-1)		2 (2-3)		3 (2-4)		13 (10-14)	
Participation in the evaluation process of a child diagnosed with autism	Yes	7 (6-7)	<0.01	1 (1-1)	0.1	3 (2-4)	<0.01	4 (3-4.75)	<0.01	14 (13-15.75)	<0.001
	No	6 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (10-14)	
Having knowledge about autism screening program	Yes	7 (6-7)	0.29	1 (1-1)	0.66	3 (2-3)	0.22	3 (2-4)	0.87	13 (11-15)	0.23
	No	6 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (10-14)	
Close association with an individual diagnosed with autism	Yes	6 (6-7)	0.32	1 (1-1)	0.25	2 (2-3)	0.64	3.5 (3-4)	0.1	13 (12-14)	0.18
	No	6 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (10-14)	
Completion of a child psychiatry internship during family medicine residency	Yes	6 (5-7)	0.81	1 (1-1)	0.29	3 (2-3)	0.9	3 (2-4)	0.27	13 (10.5-14)	0.9
	No	6 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (11-15)	
Work experience in a mental health clinic	Yes	6 (6-7)	0.73	1 (1-1)	0.5	2.5 (2-3)	0.43	3 (2-4)	0.96	13 (11-14)	0.89
	No	6 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (10-14)	
Previous medical residency experience	Yes	6 (5.5-7)	0.66	1 (1-1)	0.18	3 (2.5-4)	0.02	4 (3-5)	0.04	14 (12.5-15.5)	0.01
	No	6 (5-7)		1 (1-1)		3 (2-3)		3 (2-4)		13 (10-14)	

[†]Mann-Whitney U test, KCAHW: Knowledge About Childhood Autism among Health Workers

the answers given by family medicine residents to KCAHW questions are given in Table 3.

While there is a positive weak relationship between KCAHW total score and duration in the occupation (p=0.02, r=0.158), there was no relationship between family medicine residency duration (p=0.39) and duration of working in a mental health clinic (p=0.39). A positive weak relationship was determined between age and KCAHW total score (p=0.005, r=0.193).

In the question answered by the participants as self-evaluation of their knowledge level on autism (Figure 1), KCAHW total score was significant between the groups and

Table 3. Distribution of the answers to the KCAHW questions

Domain/question	Yes n (%)	No n (%)	I do not know n (%)	Correct n (%)	Incorrect n (%)
Domain 1					
Marked impairment in use of multiple non-verbal behaviors such as eye to eye contact, facial expression, body postures and gestures during social interaction?	192 (91.9)	13 (6.2)	4 (1.9)	192 (91.4)	18 (8.6)
Failure to develop peer relationship appropriate for developmental age?	183 (87.6)	13 (6.7)	12 (5.7)	183 (87.1)	27 (12.9)
Lack of spontaneous will to share enjoyment, interest or activities with other people?	155 (74.5)	25 (12)	28 (13.5)	155 (73.8)	55 (26.2)
Lack of social or emotional reciprocity?	165 (79.3)	14 (6.7)	29 (13.9)	165 (78.6)	45 (21.4)
Staring into open space and not focusing on any thing specific?	172 (82.7)	17 (8.2)	19 (9.1)	172 (81.9)	38 (18.1)
The child can appear as if deaf or dumb?	172 (82.7)	22 (10.6)	14 (6.7)	172 (81.9)	38 (18.1)
Loss of interest in the environment and surroundings?	180 (86.1)	17 (8.1)	12 (5.7)	180 (85.7)	30 (14.3)
Social smile is usually absent in a child with autism?	153 (73.2)	33 (15.8)	23 (11)	153 (72.9)	57 (27.1)
Domain 2					
Delay or total lack of development of spoken language?	173 (82.8)	17 (8.1)	19 (9.1)	173 (82.4)	37 (17.6)
Domain 3					
Stereotyped and repetitive movement (e.g. Hand or finger flapping or twisting)?	165 (78.9)	18 (8.6)	26 (12.4)	165 (78.6)	45 (21.4)
May be associated with abnormal eating habit?	98 (47.1)	41 (19.7)	69 (33.2)	98 (46.7)	112 (53.3)
Persistent preoccupation with parts of objects?	162 (77.5)	16 (7.6)	31 (14.8)	162 (77.1)	48 (22.9)
Love for regimented routine activities?	103 (49.5)	72 (34.6)	33 (15.7)	103 (49)	107 (51)
Domain 4					
Autism is childhood schizophrenia?	23 (11)	144 (68.9)	42 (20.1)	144 (68.6)	66 (31.4)
Autism is an auto-immune condition?	29 (13.9)	129 (61.7)	51 (24.4)	129 (61.4)	81 (38.6)
Autism is a neuro-developmental disorder?	140 (67)	44 (21.1)	25 (12)	140 (66.7)	70 (33.3)
Autism could be associated with mental retardation?	77 (36.8)	103 (49.3)	29 (13.9)	77 (36.7)	133 (63.3)
Autism could be associated with epilepsy?	72 (34.4)	103 (49.3)	34 (16.3)	72 (34.3)	138 (65.7)
Onset of autism is usually in	Neonatal age 19 (9.2)	Infancy 85 (41.3)	Childhood 102 (49.5)	102 (48.6)	108 (51.4)

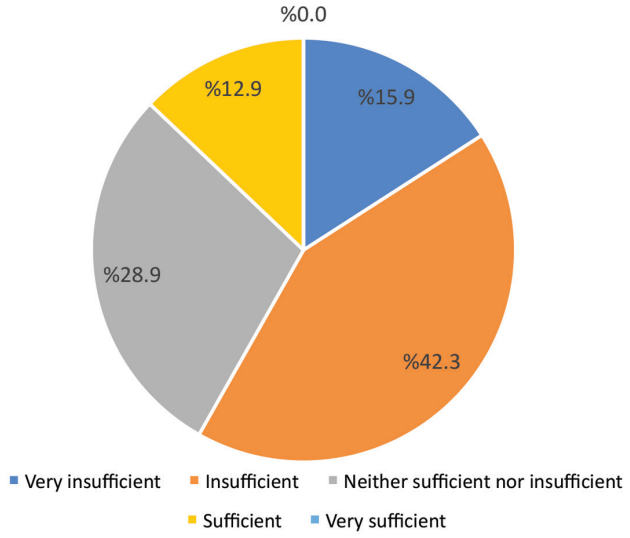

Figure 1. The participants' perception of knowledge about autism

as perception of sufficiency increased, KCAHW total score also increased ($p<0.001$, Kruskal-Wallis test).

Discussion

We investigated the level of knowledge of family medicine residents about autism using KCAHW. The validity and reliability studies of this survey for different languages have been performed and it is widely used. According to the results of the review in which the studies using KCAHW were analyzed, the authors reported that although there are no strong evidences about the global usability of the survey, it can be used in evaluating knowledge level on ASD and educational needs (15).

In our study, the mean KCAHW total score of all participants was 12.3±3.15. In a study involving senior students of medicine, nursing and psychology, the mean score was 12.24±3.24, 10.76±3.5 and 9.01±3.76 respectively (16). When the literature was reviewed in terms of studies in which the knowledge levels of family medicine resident students on autism, it was seen that there is a limited number of studies (9,17,18). None of these studies were conducted by using reliable and valid questionnaire to evaluate the knowledge about autism.

The mean score of KCAHW domain 1 which evaluates knowledge level on impairment in social interaction was 5.8±1.56 in our study. It was observed that the first question in this domain received the highest amount of correct answers (91.4%). In Citil et al.'s (19) study on pediatricians and pediatric residents, it was similarly reported that awareness and knowledge level about symptoms of ASD in terms of social interaction was the highest.

The question in domain 2 on language development and delay in speech received 82.4% accurate answers. One of the reasons for high rate of correct answer may be that parents with children who have ASD most frequently consult physicians is speech delay in their children (8). Therefore, it is a positive result that a majority of family medicine residents who will be coming across these children in primary care know that there might be speech delay in ASD. A striking finding in our study was the answer given to ASD's time of emergence. More than half of the participants gave the incorrect answer to this question. This result indicates the lack of knowledge of family medicine residents about the age period in which ASD's initial symptoms are observed.

Our study revealed that residents who had received previous training on autism, had undergone autism training during residency, had prior experience in the follow-up of a patient diagnosed with autism, had participated in the evaluation process of a child diagnosed with autism, and had previous medical residency experience obtained statistically significantly higher total scores. It has been reported that those who have taken part in the diagnosis and follow-up process of at least one patient diagnosed with ASD had statistically significant scores in all domains (20). In Pirincci et al.'s (21) study, according to their report, there was a significant increase in the knowledge levels of medical students who participated in the follow-up of patients with ASD during their child psychiatry internship period. It has been reported in other studies as well that the ASD knowledge levels of health workers who have done the follow-up of children diagnosed with ASD are higher (14,22-24). Similarly, it was determined in our study that prior follow-up of patients diagnosed with ASD in the past leads to statistically significantly higher scores in all domains and the total score with the exception of domain 2.

Knowledge about autism is statistically more significant in students who have had training (seminars, conferences, etc.) on autism in the past ($p<0.01$) and have had courses on autism during residency ($p=0.02$). Igwe et al. (16) determined in their study that KCAHW scores had a positive relationship with the number of weeks spent both in pediatrics and psychiatry and number of course hours on psychiatry/abnormal psychology. In another study, it was reported that only 10% of 277 family medicine residents accurately answered 50% or more of the survey questions and only 10.1% attended a workshop or conference on autism in the past (18). In a study carried out in England, it was reported that about two thirds of practicing physicians have not received any training on autism during their faculty of medicine or family medicine specialty education (25). It was determined in our study that 31% of the residents received some kind of training on autism in the past.

There is a limited number of studies which analyze the knowledge about autism of family medicine specialty students. In Turkey, there is a study by Sabuncuoglu et al. (17) reported that gender, age and the duration after graduation from the faculty of medicine are significantly

influential on scores received from ASD and attention deficit hyperactivity disorder scales. Another study carried out in Turkey by Hidiroglu et al. (9) reported that the knowledge level of residents receiving education in branches other than neuropsychiatry including family medicine residents on autism is medium. Alshammari et al. (18) reported that the perception of knowledge level on autism in family medicine residents is low and this might be related to lack of courses on autism in their residency education program. Since early diagnosis is important in the prognosis of ASD and family physicians contact children in early ages, we believe that it is necessary to include a theoretical course about autism in the residency education program to be able to train competent physicians, besides the rule to participate in the evaluation process of a child diagnosed with ASD.

The strong aspects of our study are being the first study which evaluates autism knowledge with an objective measurement tool among the family medicine residency students and the sample of the study embodying all family medicine residents in the city of İzmir. Since the sample of this study does not include the family medicine residents in the other cities in Turkey, the results cannot be generalized. Another limitation of this study is that it was not designed as a longitudinal study to evaluate the relationship between the level of knowledge and the family medicine education process over time.

Conclusion

One of the most important factors in the prognosis of ASD is the early diagnosis of children with ASD and the early initiation of treatment interventions. As a result of this study, it was determined that family medicine residents' knowledge level on autism is not sufficient. Prior follow-up of patients with ASD and/or involvement in the evaluation process of patients with ASD and having had ASD training during residency are variables which increase knowledge level.

In the light of these findings, we believe that it is important in terms of increasing awareness and knowledge level on autism that training is given in certain intervals both prior to and after graduation about autism; courses on neurodevelopmental disorders are added to family medicine residency education curriculum; rotation in child and adolescent psychiatry is made possible for residents to acquire clinical competency; education is provided on autism screening and follow-up programs and children with risk of autism are referred to child and adolescent psychiatrists.

Ethics

Ethics Committee Approval: The ethics committee approval of the study was given by University of Health Science Turkey, İzmir Bozyaka Training and Research Hospital Clinical Research ethics committee (decision number: 01, date: 12.06.2019).

Informed Consent: The study and the procedure was explained in detail to all of the volunteers who participated in the study and their consent was taken.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: A.B.G., Ö.T., B.G.Ö., Design: A.B.G., Ö.T., B.G.Ö., Data Collection or Processing: A.B.G., Analysis or Interpretation: A.B.G., Ö.T., B.G.Ö., Literature Search: A.B.G., Writing: A.B.G., Ö.T., B.G.Ö.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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