

Pediatricians' attitudes, practices, and perceived barriers to school readiness

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ABSTRACT

Background. School readiness (SR) has been adopted by the American Academy of Pediatrics (AAP) as a component of health supervision, but the medical community's role is unknown. We evaluated the pediatricians' attitudes, practices, and perceived barriers to SR.

Methods. This multicenter, cross-sectional descriptive study was performed among 787 general pediatricians, pediatric residents, subspecialists, and subspecialty fellows. A 41-item survey was administered.

Results. Forty-nine point two percent of the pediatricians defined SR as a multidimensional issue, as outlined by the AAP, whereas 50.8% defined it as the child's set of skills or passing the SR tests. Three-quarters of pediatricians believed that SR assessment tests are necessary before starting school, and children who do not appear ready should wait a year. To promote SR, the rates of usually fostering at least four of the five "Rs" (reading, rhyming, routines, rewarding, relationships) and integrating developmental surveillance into daily practice were 37.8% and 23.8%, respectively. Only 2.2% of pediatricians usually inquired about eight adverse childhood experiences (ACEs), and 68.9% did not usually ask about any. Usually fostering at least four of the five "Rs" was associated with usually integrating developmental surveillance ($p<0.001$), usually inquiring about each ACE ($p<0.001$), and being perceived as responsible for promoting SR ($p<0.01$). Training on SR during pediatric residency was 2.7%. Time constraints and insufficient knowledge were the most common barriers.

Conclusions. Pediatricians were not familiar with the concept of SR and had some misconceptions. There is a need for additional training regarding pediatricians' roles in promoting SR along with addressing multiple, modifiable barriers within the health system.

Key words: School readiness, pediatrician, adverse childhood experiences, developmental surveillance, barriers.

The common goal of the Pediatric and Early Childhood Education (ECE) fields is to

support optimal child development during the first years of life.¹ One of the measures for maximizing developmental potential is school readiness (SR). SR is a multidimensional issue that includes not only children's readiness for school but also schools' readiness for children as well as the family and community supports and services that contribute to school success.^{2,3} Being ready for school is strongly associated with higher academic achievement, lower dropout rates, lower teen pregnancy and

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juvenile arrest rates, and better health, social, and economic outcomes in adulthood.⁴⁻⁷

Among the 17 Sustainable Development Goals published by the United Nations, the fourth goal is "By 2030, ensure access to quality early childhood development, care, and preschool education so that all girls and boys are ready for school".⁸ Despite a significant increase in preschool enrollment in Türkiye over the past ten years, school enrollment rates for children between the ages of three and five have fallen of both the OECD (the Organisation for Economic Co-operation and Development) average and the goals set by the Ministry of National Education.^{9,10} Children from low-income families and those born to less-educated mothers are less likely to access preschool education.¹¹ Türkiye has a limited publicly funded, consistent, and comprehensive ECE system to support the SR of these disadvantaged children. General pediatricians, pediatric residents, pediatric subspecialists, and subspecialty fellows have many opportunities to reach almost all preschool-aged children, especially those affected by poverty and inadequate ECE, within the healthcare system in Türkiye, as in other countries. During the preschool years, children visit general pediatricians an estimated minimum of ten times for a variety of healthcare needs, including vaccination, nutrition, and physical-growth monitoring, as well as management of acute or chronic diseases.¹² Pediatric subspecialists and subspecialty fellows are also well-positioned to reach children with chronic health conditions who are at higher risk of experiencing social-emotional, cognitive, and language difficulties, as well as not being ready for school.

The American Academy of Pediatrics (AAP) has adopted SR as a component of health supervision and developed a policy statement regarding the roles and responsibilities of pediatricians in promoting SR.^{2,3} The AAP recommends pediatricians promote healthy parent-child relationships and early learning environments by fostering the 5 "Rs" of early education ("reading" aloud together

daily; supporting reciprocal and nurturing "relationships"; "rhyming", talking, playing together; establishing "routines"; "rewarding" everyday success), informing families about safe and supportive preschool education, limiting screen exposure, as well as providing optimal physical well-being.³ According to the policy statement, to promote SR, pediatricians should also focus on the developmental and behavioral issues during pediatric visits and refer children at risk to community services and evidence-based family support programs.³ Without early detection and appropriate intervention for children with developmental difficulties in their first years of life, these children are unlikely to be ready for school.¹³ The AAP statement also explicitly states that in order to enter school ready to learn, children need protection from injury, abuse, and neglect as well as from exposure to violence and discrimination.¹⁴ So, the AAP recommends pediatricians screen for adverse childhood experiences (ACEs) in order to address inadequacies in SR that may emanate from a toxic home environment.¹⁴

SR refers to readiness for the first year of formal primary education. Since formal primary education in the United States of America (USA) begins with kindergarten at around age 5, the term "school readiness" has been used for kindergarten by the AAP, which predicts subsequent primary SR.^{3,14} However, in Türkiye, as in Europe, China, and Canada, children start their formal education at six years of age in primary education schools, and kindergarten education is facultative.^{15,16} Therefore, SR refers to readiness for primary school in our study.

Despite the AAP's recommendations, pediatricians' current attitudes, practices, and perceived barriers to SR are unknown. Therefore, this study aimed to evaluate pediatricians' familiarity with the concept of SR, reveal their attitudes and clinical practices on this issue, investigate the variables that are effective in their clinical practices supporting SR, and identify the barriers they perceive when promoting SR.

Material and Methods

Survey administration

This multicenter, cross-sectional descriptive study was conducted at seven training and research hospitals in Türkiye, specifically in the provinces of Ankara, Izmir, Istanbul, and Adana. After approval by the Ankara Bilkent City Hospital Ethics Committee (01.09.2021; E2-21-758), the survey was distributed online using "Google Docs" or handed out from September 10, 2021, to October 10, 2021. The research was conducted on volunteer pediatricians, pediatric residents, pediatric subspecialists, and subspecialty fellows. Although this study was carried out primarily in these seven hospitals, an announcement with a direct link to "Google Docs" was also made through the WhatsApp groups of pediatricians. So, pediatricians who wanted to participate in the study individually from other hospitals and private practices were also included. As well as well-child care, chronic healthcare visits are crucial opportunities to address ECE inequities and support SR, so we included general pediatricians, pediatric residents, pediatric subspecialists and subspecialty fellows in the "pediatrician" group. The exclusion criterion was the failure to complete the survey. Informed consent was taken from pediatricians as seen in supplementary appendix.

Survey questions

After an extensive literature review, the study team developed a 41-item survey. A preliminary study was conducted on a sample of 20 pediatric residents to evaluate the comprehension of questions. Survey revisions (e.g., format modification, item expression, response options) were made with the feedback to ensure ease of understanding and implementation.

The survey was grouped into five sections: (1) Demographic information and practice characteristics; (2) Beliefs and attitudes about SR; (3) Clinical practices to promote SR; (4) Training and competence for SR;

and (5) Perceived barriers to supporting SR (Supplementary Appendix). It consisted of five open-ended, one yes-no, four multiple choice, eleven 5-point Likert scale, seventeen 4-point Likert scale, and three 3-point scale questions. It took approximately seven minutes to fill out.

Demographic information and general practices such as age, gender, title, having the experience of starting school as a parent, years in practice, the average number of children examined in the 0-5 age group per day, and the average time of service provided for each child were elicited with one yes-no and five open-ended questions.

To evaluate how pediatricians perceive the components of SR, they were asked to choose the best definition of SR from a multiple-choice question, adapted from the study of Perrin et al.¹⁷ A series of eleven positively worded statements with responses on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree" was used to assess beliefs and attitudes about SR. "Strongly agree/agree" responses were compared to "not sure/disagree/strongly disagree".

The clinical practices to promote SR were evaluated with the following: fostering the 5 "Rs", limiting screen time, advising preschool education, identifying developmental-behavioral issues, and inquiring about ACEs. Questions, including clinical practices relating to fostering the 5 "Rs", limiting screen time, and advising preschool education were formed from a 4-point Likert scale (1: Never, 2: Rarely, 3: Sometimes, 4: Usually). Pediatricians questioned their clinical practices regarding developmental-behavioral issues with two multiple-choice and two 4-point Likert scale (1: Never, 2: Rarely, 3: Sometimes, 4: Usually) questions. Inquiring about ACEs (parental mental illness, parental separation or divorce, physical or sexual abuse, physical or emotional neglect, hostile/rejecting parenting, domestic violence experience, parental alcohol or drug use, incarcerated caregiver) elicited with eight 4-point Likert scale (1: Never, 2: Rarely, 3: Sometimes, 4: Usually) questions.^{18,19} Responses

were dichotomized to compare “usually” with “sometimes/rarely/never”. Whether pediatricians’ had received training during residency and their perceived competency on SR were evaluated with 3-point scale (a: Yes, b: No, c: Not sure) questions and responses were dichotomized such as “yes” to compare to “no/not sure”. A multiple-choice question was used to obtain information on the barriers perceived by pediatricians in supporting SR.

Sample size

The sample size with a 5% margin of error and a 95% confidence level was 370 and 377 for a population of 10000 and 20000, respectively. When the number of active pediatricians (general pediatricians, pediatric residents, pediatric subspecialists, and subspecialty fellows) is estimated to be between 15000 and 20000 in our country, it is aimed to reach at least 377 pediatricians.²⁰

Statistical analyses

Statistical analysis was performed with the SPSS statistical package (v. 20.0 for MAC). The chi-square test was used to compare categorical variables. A t-test and Mann-Whitney U test were used to compare two groups with a normal and non-normal distribution of data, respectively. Kruskal-Wallis test was used to compare more than two groups with non-normal distributions. A p-value <0.05 was accepted as statistical significance. A chi-square test was used to compare general pediatricians/residents and subspecialists/fellows in terms of their beliefs and attitudes, clinical practices, previous training related SR, perceived competence, and responsibility.

Results

Demographic characteristics of pediatricians

A total of 787 pediatricians responded to the survey. Overall, the proportion of general pediatricians, pediatric residents, pediatric subspecialists, subspecialty fellows was 37.4%

(n=294), 27.2% (n=214), 20.8% (n=164) and 14.6% (n=115), respectively. The median age of the pediatricians was 35.5 (24-65), and 74.7% were female. Among the pediatricians, 46.7% (n=367) had previously experienced starting their child at school. The median practice year in the pediatrics field was 7 (1-45) years. Three-hundred-eleven (39.5%) pediatricians had more than ten years of experience. The pediatric residents were in the median 3rd (1-4) year of training. Pediatricians reported that they served a median of 25 (2-200) children aged 0-5 years and their families per day, with a median of 10 (2-60) minutes for each child.

The familiarity with the concept of SR

Three hundred ninety-one (49.7%) pediatricians identified the definition of SR as a child’s skill set for school success, 1.1% (n=9) identified as having a score on SR tests ≥ 70 ; the remaining 49.2% (n=387) identified as outlined by AAP (a multidimensional characteristic that includes the child’s skills, the school’s adaptability, and family/community support).

The beliefs and attitudes about SR

Almost all (96.4%) pediatricians agreed that SR is significant for long-term academic success. Less than half (45.5%) believed that readiness could be measured easily. Approximately three-quarters of the pediatricians believed that a SR assessment test should be conducted for each child before starting school, and children who do not appear ready for school should wait a year. While 40.8% of pediatricians agreed that they are responsible for promoting SR, 61.1% agreed that they have a responsibility to advocate for access to services (Table I).

The median year of experience in the pediatrics field was higher in pediatricians who believed that SR could be measured easily (median year of experience 9 (1-45) vs. 7 (1-45), p=0.000) and children who were not ready for school should wait a year (median year of experience 8 (1-45) vs. 7 (1-40), p=0.016). Pediatricians with higher practice years were also more likely to agree

Table I. Pediatricians’ beliefs and attitudes about school readiness

	Strongly Agree n (%)	Agree n (%)	Not sure n (%)	Disagree n (%)	Strongly Disagree n (%)
School readiness is significant for long-term academic success.	665 (84.5)	94 (11.9)	12 (1.5)	11 (1.4)	5 (0.6)
School readiness can be measured easily.	68 (8.6)	290 (36.8)	170 (21.6)	223 (28.3)	36 (4.6)
Before starting school, a school readiness assessment test should be conducted for each child.	369 (46.9)	251 (31.9)	95 (12.1)	63 (8.0)	9 (1.1)
Children who do not appear ready for school should wait a year.	293 (37.2)	276 (35.1)	140 (17.8)	62 (7.9)	16 (2.0)
The achievement gap between children with and without school readiness closes over time.	57 (7.2)	267 (33.9)	203 (25.8)	193 (24.5)	67 (8.5)
It is the school’s responsibility to ensure all children’s educational needs who are old enough to attend school legally, regardless of their readiness status.	157 (19.9)	220 (28.0)	153 (19.4)	164 (20.8)	93 (11.8)
Children who attend preschool are more successful in school than those who do not.	375 (47.6)	235 (29.9)	110 (14.0)	44 (5.6)	23 (2.9)
Pediatricians are responsible for promoting school readiness.	99 (12.6)	222 (28.2)	192 (24.4)	184 (23.4)	90 (11.4)
Pediatricians are responsible for advocating access to services to support school readiness.	218 (27.7)	263 (33.4)	146 (18.6)	109 (13.9)	51 (6.5)
Early identification and intervention of developmental difficulties promote school readiness, success, and learning outcomes.	598 (76.0)	180 (22.9)	8 (1.0)	1 (0.1)	0
Adverse childhood experiences cause toxic stress and negatively affect brain development, learning, and school readiness in preschool years.	378 (48.0)	346 (44.0)	55 (7.0)	6 (0.8)	2 (0.3)

with their responsibility for promoting (median year of experience 8 (1-45) vs. 7 (1-45), p=0.014) and advocating SR (median year of experience 8 (1-45) vs. 7 (1-45), p=0.024). Pediatricians who had previously experienced starting their child at school and male pediatricians were more likely to agree that readiness for school can be measured easily (p=0.000 and p=0.006, respectively).

Clinical practices to promote SR

The frequencies of fostering the 5 “Rs” suggestions, advising to limit screen time, and advising to attend preschool education are shown in Table II. Approximately one-fourth (24.8%) of pediatricians reported that they did not usually foster any of the 5 “Rs” as a part

of daily practice, while 37.8% (n=298) usually fostered at least four of the 5 “Rs”. Pediatricians who usually fostered at least four of the 5 “Rs” were older (median age 37 (25-68) vs. 34 (25-64), p=0.001), had longer duration of health visit for each child (median service duration 10 (2-60) vs. 10 (2-50) minutes, p=0.001), had more frequently experienced their children’s beginning to school (55.2% vs. 40.9%, p=0.002), and had more experience in the pediatrics field (median year of experience 9 (1-42) vs. 6 (1-40), p=0.000) compared to those who did not usually foster any of the 5 “Rs”. There was no gender difference between these two groups (female sex ratio 75.1% vs. 73.3%, p=0.663). Of the pediatricians, 81.4% usually recommend limiting screen time. Half of the pediatricians (52.3%) stated that they usually advise attending

Table II. The frequencies of the pediatricians giving 5 “Rs” suggestions, advising to limit screen time and to attend preschool education.

	Usually n (%)	Sometimes n (%)	Rarely n (%)	Never n (%)
Read aloud to your child daily.	354 (45.0)	255 (32.4)	127 (16.1)	51(6.5)
Provide sensitive, tolerant, reciprocal, and nurturing relationships with your child.	416 (52.9)	219 (27.8)	118 (15)	34 (4.3)
Sing to your child, tell stories, talk, play, and rhyme.	406 (51.6)	222 (28.2)	119 (15.1)	40 (5.1)
Establish routines around meals, sleep, and playtimes.	401 (50.9)	237 (30.1)	118 (15.0)	31 (3.9)
Praise your child as a reward for everyday successes.	377 (47.9)	242 (30.7)	134 (17.0)	34 (4.3)
Limit screen time.	641 (81.4)	112 (14.2)	28 (3.6)	6 (0.8)
Provide your child to attend preschool education.	412 (52.3)	244 (31.0)	84 (10.7)	47 (6.0)

preschool education before primary school, while 31.0% sometimes advise.

Almost all (98.9%) pediatricians agreed that timely identification of developmental difficulties and appropriate referrals for early intervention programs positively affect SR, success, and learning outcomes, and only 23.8% (n=187) reported that they integrate developmental surveillance into their practices. The frequency of using a validated tool for developmental assessment was reported as usually, sometimes, rarely, and none by 10.8%, 17.4%, 25.4%, and 46.4% of pediatricians, respectively. Speech and language delay, global developmental delay, behavioral problems, and attention-deficit/hyperactivity disorder were reported as the most common developmental-behavioral difficulties limiting SR by 24.9%, 24.4%, 22.5%, and 17.9% of pediatricians, respectively. Pediatricians reported that they referred the child who does not appear ready for school to a developmental and behavioral pediatrician (40.4%), child development specialist (34.6%), child psychiatrist (19.6%), preschool or kindergarten services (2.0%), child neurologist (1.0%) and others (2.4%).

Most pediatricians (92.0%) agreed that ACEs cause toxic stress and disturb brain development, learning, and SR in the preschool years. However, only 2.2% of pediatricians usually inquired about 8 ACEs, 28.9% usually asked for some, and 68.9% did not usually ask about any. Pediatricians who usually asked

for some of the ACEs had a longer duration of health visit for each child (median service duration 10 (3-60) vs. 10 (2-50) minutes, p=0.000) compared to pediatricians who did not usually ask about any. There was no difference between these two groups in terms of age (median age 36 (24-70) vs. 35 (25-64), p=0.126), gender (female sex ratio 79.0% vs. 72.9%, p=0.067), years of experience in the pediatrics field (median year of experience 8 (1-45) vs. 7 (1-40), p=0.055), and prior experience of starting their children at school (47.5% vs. 46.7%, p=0.825). The ACEs that pediatricians asked for most usually were parental separation or divorce (17.4%) and physical or emotional neglect (17.3%).

Training, perceived competency, and responsibility for SR

Very few pediatricians (2.7%) reported that they received training on SR in their pediatric residency. Only 11.7% of the pediatricians considered that they had sufficient knowledge about SR, and 10.8% perceived themselves as competent in assessing a child's readiness for school. The rates of usually fostering at least four of the 5 “Rs” in routine practice (61.9% vs. 34.7%, p=0.001), usually performing developmental surveillance (38.0% vs. 21.9%, p=0.001), and usually using a validated tool for developmental assessment (18.5% vs. 9.8%, p=0.012) were significantly higher in pediatricians who considered themselves to have sufficient knowledge about SR than those who did not. Although the rate of

usually asking some of the ACEs was higher in pediatricians who considered themselves to have sufficient knowledge, the difference was not statistically significant (38.0% vs. 30.0%, $p=0.118$). Pediatricians who considered themselves to have sufficient knowledge more frequently agree that SR could be measured easily (59.8% vs. 43.5%, $p=0.003$), children who attended preschool education are more successful in school (85.9% vs. 76.4%, $p=0.041$), and pediatricians are responsible for promoting SR (51.1% vs 39.5%, $p=0.033$), compared to those who did not. The rate of agreement with the necessity of a SR assessment test for each child before school (79.3% vs. 78.7%, $p=0.887$) and the requirement of postponing the start of school for children who are not ready for school (80.4% vs 71.2%, $p=0.062$) were similar between groups. Other beliefs and attitudes were similar.

Usually fostering at least four of the 5 “Rs” in routine practice was significantly associated with usually integrating developmental surveillance ($p<0.001$), usually using a validated tool ($p<0.001$), and usually inquiring about each ACE ($p<0.001$). Also, pediatricians who usually foster at least four of the 5 “Rs” were more likely to have training on SR ($p=0.006$), perceive themselves as competent to assess SR ($p<0.001$) and be responsible for supporting ($p<0.001$) and advocating SR ($p=0.002$) (Table III).

The beliefs and attitudes, clinical practices, training, perceived competence, and responsibility about SR were similar between general pediatricians/pediatric residents and subspecialists/subspecialty fellows ($p>0.05$).

Perceived barriers to promoting SR

Pediatricians’ perceived barriers to support SR were time constraints (72.3%), lack of knowledge about SR (56.7%), not bringing up this issue during health care visits by families (47.8%), families’ not following the suggestions given (31.5%), confusion about which specialty or community resources to refer the child who is not ready for school (21.3%), not perceiving

themselves as responsible for promoting SR (9.8%), and considering that this issue is mostly the responsibility of educators (0.5%).

Discussion

To the best of our knowledge, this is the first study that provides preliminary data regarding the implementation of the AAP’s SR technical report recommendations by the medical community and reveals their role in promoting SR. The present study showed that AAP recommendations had not been well adopted in pediatric practices in Türkiye and significant barriers must be addressed.

Approximately 50% of the pediatricians defined SR as the child’s set of skills rather than a multidimensional issue; only 49% described it as not only with the child but also with the family/community support and services, and schools’ readiness for the child’s individual needs and abilities. Pediatricians’ knowledge of the roles of families, communities, and schools in SR is significant for anticipatory guidance, identifying high-risk children, referring to community resources, and providing effective advocacy. In our study, the pediatricians’ perceptions relating to SR are grounded in the child’s maturational process.

All children who are old enough to attend school legally are entitled to an appropriate education in the least restrictive environment. Most communities implement some form of “school readiness tests” to assess whether the child is ready for school or not. However, SR tests can easily be incorrectly applied and interpreted. When SR tests are administered by individuals who have a limited perspective on the variations of normal development or who have inadequate formal training in test administration, children can be wrongly identified as not ready for school.^{3,21} Approximately two-thirds of the pediatricians in our study stated that a SR assessment test should be conducted for each child before starting school, and children who are not ready for school should wait a year to mature.

Table III. Clinical practices relating developmental problems and adverse childhood experiences, training competence, and perceived responsibility about school readiness, and their association with fostering the 5 “Rs”.

	Fostering at least four of the 5 “Rs” in daily practice			p-value
	Usually n=298 n (%)	Sometimes/ Rarely/Never n=489 n (%)	Total n=787 n (%)	
Frequency of integrating developmental surveillance into clinical practice for early identification of developmental problems				
Usually	105 (35.2)	82 (16.8)	187 (23.8)	<0.001
Sometimes / Rarely/ Never	193 (64.8)	407 (83.2)	600 (76.2)	
Frequency of using a validated tool for developmental assessment				
Usually	54 (18.1)	31(6.3)	85 (10.8)	<0.001
Sometimes / Rarely/ Never	244 (81.9)	458 (93.7)	702 (89.2)	
Frequency of inquiring about adverse childhood experiences				
Parental mental illness				
Usually	64 (21.5)	31(6.3)	95 (12.1)	<0.001
Sometimes / Rarely/ Never	234 (78.5)	458 (93.7)	692 (87.9)	
Parental separation or divorce				
Usually	86 (28.9)	51 (10.4)	137 (17.4)	<0.001
Sometimes / Rarely/ Never	212 (71.1)	438 (89.6)	650 (82.6)	
Physical or sexual abuse				
Usually	66 (22.1)	42 (8.6)	108 (13.7)	<0.001
Sometimes / Rarely/ Never	232 (77.9)	447 (91.4)	679 (86.3)	
Physical or emotional neglect				
Usually	83 (27.9)	53 (10.8)	136 (17.3)	<0.001
Sometimes / Rarely/ Never	215 (72.1)	436 (89.2)	651 (82.7)	
Hostile/rejecting parenting				
Usually	45 (15.1)	19 (3.9)	64 (8.1)	<0.001
Sometimes / Rarely/ Never	253 (84.9)	470 (96.1)	723 (91.9)	
Domestic violence experience				
Usually	60 (20.1)	31 (6.3)	91 (11.6)	<0.001
Sometimes / Rarely/ Never	238 (79.9)	458 (93.7)	696 (88.4)	
Parental alcohol/drug use				
Usually	43 (14.4)	28 (5.7)	71 (9.0)	<0.001
Sometimes / Rarely/ Never	255 (85.6)	461 (94.3)	716 (91.0)	
Incarcerated caregiver				
Usually	32 (10.7)	12 (2.5)	44 (5.6)	<0.001
Sometimes / Rarely/ Never	266 (89.3)	477 (97.5)	743 (94.4)	
Received training on school readiness				
Yes	14 (4.7)	7 (1.4)	21 (2.7)	0.006
No/ Not sure	284 (95.3)	482 (98.6)	766 (97.3)	
Have enough information about school readiness				
Yes	57 (19.1)	35 (7.2)	92 (11.7)	<0.001
No/ Not sure	241 (80.9)	454 (92.8)	695 (88.3)	
Competent to assess a child's school readiness				
Yes	56 (18.8)	29 (5.9)	85 (10.8)	<0.001
No/ Not sure	242 (81.2)	460 (94.1)	702 (89.2)	
Pediatricians are responsible for promoting school readiness				
Agree/ Strongly Agree	142 (47.7)	178 (36.4)	320 (40.7)	<0.001
Not sure/ Disagree/ Strongly Disagree	156 (52.3)	311 (63.6)	467 (59.3)	
Pediatricians are responsible for advocating access to services to support school readiness				
Agree/ Strongly Agree	203 (68.1)	279 (57.1)	482 (61.2)	0.002
Not sure/ Disagree/ Strongly Disagree	95 (31.9)	210 (42.9)	305 (38.8)	

This remarkable result is worrisome when considering the inappropriate use of readiness tests, which may label children as “not ready” for school and keep them out of the benefits of the classroom environment, which is crucial for learning and peer interactions.¹⁴

Supportive parenting and learning home environments are considered to be the characteristics of ready families. A study conducted in a low-income population showed that parents find SR important and feel responsible for preparing their child for school.²² However, the lack of knowledge of how to prepare their children for school was the most reported barrier to SR.²² Research emphasized that parents identify pediatricians as the most trusted and helpful professionals and accept their advice about parenting and managing developmental and behavioral issues and want more guidance about learning, behavior, and development.²³⁻²⁶ However, in our study, pediatricians agreed that it was their responsibility to advocate for children’s access to services rather than to promote SR. Only 37.8% of pediatricians reported that they usually recommended at least four of the 5 “Rs”. It was observed that the most common recommendation given to support SR was to limit screen time. This finding shows that pediatricians have a high level of awareness regarding screen time’s detrimental effects on development but limited awareness regarding the 5 “Rs”.

Although 98.9% of pediatricians agreed that early identification and intervention of developmental difficulties promotes SR, only one-fourth usually integrate developmental surveillance into their clinical practices. Approximately 90% of pediatricians usually rely heavily on their intuition and clinical judgment on developmental issues rather than using a validated tool. The rate of using a validated tool is far behind that of developed countries.^{27,28}

Despite the fact that most pediatricians endorsed the fact that ACEs impair learning and SR, only 2.2% of them usually inquired

about all 8 ACEs, and 68.9% did not usually ask about any. Our findings are compatible with a previous study from the USA, which reported that 32% of the pediatricians did not inquire about any ACEs; only 4% usually asked about all 7 ACEs (physical or emotional neglect was not included in their study questionnaire).²⁹

The statistically significant findings showed that the pediatricians who gave more suggestions for the 5 “Rs” were more likely to identify developmental problems and ACEs in the present study. On the other hand, the previously received training on SR seems to be associated with giving more 5 “Rs” related suggestions in our study. However, since only a small number of pediatricians (n=14) within this group had training, this result can not be generalized. Consistently, the pediatricians who considered themselves to have sufficient knowledge about SR were more likely to foster the 5 “Rs”, perform developmental surveillance, and use a validated tool for developmental assessment. But surprisingly, pediatricians who consider themselves to have sufficient knowledge about SR has also some misconceptions, especially about the application of SR tests for each child before school and the postponement of starting school for those who are not ready. These findings suggest that additional training on SR may foster pediatricians’ knowledge, competence, and confidence and also lead to greater interest and involvement in clinical practice.

There are some barriers that pediatricians perceive when promoting SR. Similar to the previous studies on the identification and management of developmental and mental health issues from the USA, Israel, and Türkiye, our study also showed that lack of time during appointments and insufficient clinical knowledge were the most frequently cited barriers.^{28,30-35} Because of the high patient load and busy schedules, many of the pediatricians reported not being able to provide detailed evaluations regarding developmental issues and SR. The median visit duration was 10 minutes and 72.3% of the pediatricians

reported not having enough time to promote SR. Moreover, our results showed that longer duration of health care visits for each child was associated with fostering at least four of the 5 "Rs" as usually and asking about some ACEs during the clinical practices. These results reflect that pediatricians may usually focus more on medical problems and have limited time to approach developmental issues and SR due to time constraints. Most pediatricians (97.3%) reported that they did not receive any formal education on SR during pediatric residency training. Moreover, most pediatricians did not perceive themselves as responsible for promoting SR. Perrin et al.¹⁷ showed that a resident-focused SR curriculum increases pediatric residents' knowledge, confidence, and ability to manage concerns in clinical encounters. Topics relating to SR and pediatricians' role in promoting SR should be introduced into medical school and pediatric residency curricula. There is also a need for in-service training on SR for clinicians. Previous studies have shown that training programs for clinicians to enhance child development improve their practices.^{36,37} The responses indicated that one-fifth of the pediatricians had difficulties promoting SR due to ambiguity about which specialty or community resources to refer children and families needing help. In developed countries, there are high-quality evidence-based educational intervention programs and community resources integrated into the pediatric primary care setting to support parents on how to best prepare their child for school such as Reach out and Read, Let's Read, Positive Parenting Program, and Head Start.^{14,38,39} Unfortunately, there is a lack of clinic-based, culturally tailored, and feasible early childhood educational interventions and parenting models in low and middle-income countries.

There are some limitations to this study. Since participation in the survey was voluntary, a response bias is possible because more pediatricians with a greater interest in the topic may have completed the questionnaire.⁴⁰

Because this study is based on self-report, pediatricians may not have fully reported their actual practices. Another limitation is the lack of standardized data collection instruments on the topic of SR, and the study's dependency on a survey without reliability and validity. Nonetheless, the large sample size and being based on a nationally representative sample, which provides the generalizability of our results are the major strengths of our study. The data from our research is significant in identifying and addressing problems in promoting SR within the healthcare system in Türkiye and other countries with similar resources.

In conclusion, pediatricians are the key professional source for promoting SR in children. Given the evidence for the potential long-term implications, our findings suggest a strong need for additional training regarding the roles and responsibilities of pediatricians on SR, along with addressing multiple, modifiable barriers within the healthcare system.

Ethical approval

Ethical approval was obtained from Ankara Bilkent City Hospital Ethics Committee (01.09.2021; E2-21-758).

Author contribution

The authors confirm contribution to the paper as follows: study conception and design: PC, TCY, IAS; data collection: PC, TCY, OB, GKE, AU, IAS, DS, TC; analysis and interpretation of results: NOE, PC; draft manuscript preparation: PC, TCY, IAS. All authors reviewed the results and approved the final version of the manuscript.

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Conflict of interest

The authors declare that there is no conflict of interest.

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