Parents' perceptions of early intervention and developmental strategies for children on the autism spectrum

Percepcije roditelja o ranoj intervenciji i razvojnim strategijama za djecu s autizmom

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Abstract

Introduction: Early intervention is a systematic approach aimed at supporting children with autism spectrum disorder symptoms, helping to minimize these symptoms and enhancing developmental potential from prenatal to preschool age.

Aim: To survey parents about their methods of obtaining necessary information for therapies, their awareness of early intervention, and their opinions on the role of exercise in their children's development.

Materials and Methods: The study was conducted from January to March 2024, involving 36 parents of children with autism spectrum disorder. Participants completed an anonymous questionnaire via Google Forms, including sociodemographic data and questions related to early intervention and exercise.

Results: Significant developmental changes in children were observed between the ages of one and two, with speech absence being the most common initial symptom. The time from recognizing the first symptoms of autism to diagnosis often exceeded one year. Notably, 67% of parents reported familiarity with early intervention, primarily gained through the Internet and discussions with experts. Parents emphasized the importance of their involvement in therapy (69%) and expressed satisfaction with their understanding of therapy benefits (42%).

Conclusion: Parents of children with autism spectrum disorder demonstrate a satisfactory level of knowledge about therapy methods, early intervention, and their role in the therapeutic process, underscoring their proactive involvement in their children's development.

Key words: autism spectrum disorder, developmental progress, early intervention, parental awareness, therapeutic process

Sažetak

Uvod: Rana intervencija je sustavni pristup usmjeren na podršku djeci sa simptomima poremećaja iz spektra autizma, pomažući u smanjenju tih simptoma i poboljšanju razvojnog potencijala od prenatalnog do predškolskog uzrasta.

Cilj: Ispitati roditelje o njihovim metodama pribavljanja potrebnih informacija za terapije, njihovoj svjesnosti o ranoj intervenciji i mišljenjima o ulozi vježbanja u razvoju njihove djece.

Materijali i metode: Studija je provedena od siječnja do ožujka 2024. godine, a uključila je 36 roditelja djece s poremećajem iz spektra autizma. Sudionici su ispunili anonimni upitnik putem Google Obrasca, koji je uključivao sociodemografske podatke i pitanja vezana uz ranu intervenciju i vježbanje.

Rezultati: Značajne promjene u razvoju djece uočene su između prve i druge godine života, pri čemu je odsutnost govora bila najčešći početni simptom. Vrijeme od prepoznavanja prvih simptoma autizma do dijagnoze često je prelazilo jednu godinu. Primjetno je da je 67% roditelja prijavilo poznavanje rane intervencije, najčešće stečene putem Interneta i razgovora sa stručnjacima. Roditelji su naglasili važnost svoje uključenosti u terapiju (69%) i izrazili zadovoljstvo svojim razumijevanjem koristi terapije (42%).

Zaključak: Roditelji djece s poremećajem iz spektra autizma pokazuju zadovoljavajuću razinu znanja o metodama terapije, ranoj intervenciji i njihovoj ulozi u terapijskom procesu, naglašavajući svoju proaktivnu uključenost u razvoj svoje djece.

Ključne riječi: poremećaj iz spektra autizma (PSA), razvojni napredak, rana intervencija, svjesnost roditelja, terapijski proces

Introduction

Autism is a highly complex neurological developmental disorder that persists throughout a person's life and impacts various mental functions in young children. The most noticeable deviations occur in areas: communication, social interaction, and behavior, as well as interests and activities. The first three years are regarded as the most critical for development, with early symptoms of autism being most apparent during this time. These symptoms can arise from insufficient attention to social stimuli, which may include disturbances in sleep, feeding, or sucking, crying, excessive stillness, lack of laughter, absence of postural adaptation (such as rigidity or muscle weakness), and a disinterest in toys. Over time, children may also exhibit a lack of imagination and intellectual challenges[1]. Historically, the traits of autism were initially associated with forms of childhood schizophrenia. It wasn't until the 1980s that autism began to be recognized as a distinct diagnostic category. This period saw various updates regarding the terminology, the number of categories within the diagnosis, general criteria, and the specific criteria that a child must meet for diagnosis, along with adjustments in the inclusion and exclusion factors for establishing a diagnosis[2]. According to this framework, the term "autistic disorder" (ASD) was classified as a pervasive developmental disorder, which included a group of disorders in early childhood of unknown origin. Alongside autistic disorder, this classification also encompassed Rett's disorder, Asperger's syndrome, disintegrative disorder, and a non-specific pervasive developmental disorder that includes atypical

autism[1,2]. The exact causes of autism remain unclear, although various studies suggest it arises from a combination of factors, including genetic (inheritance, gene mutations, genetic anomalies), organic (speech and language disorders), traumatic (such as uterine bleeding, premature birth, low APGAR (appearance, pulse, grimace, activity and respiration) scores, and micro-traumas to the central nervous system (CNS)), metabolic, and psychological influences[3]. It is recognized that these various factors combine to create a unique clinical picture, and while ASD manifests differently in each individual, it encompasses similar conditions[1]. The triad of symptom deviations serves as the diagnostic criteria for determining the diagnosis and is essential for the screening process[1,3]. Early intervention, as a structured method to assist children exhibiting the risk as mentioned earlier symptoms, is crucial for reducing these symptoms, ensuring continuous and relatively stable development, and enhancing their developmental potential at the earliest age. This approach typically spans from the prenatal period through the preschool age. A key factor for effective early intervention is timely diagnosis. According to numerous studies, ASD is usually diagnosed by the child's fourth year or later, although experts emphasize the importance of early detection and recognition of risk signs[4]. The most positive outcomes are observed when intervention programs are initiated within the first three years of life, as this period is marked by significant modifications, adaptations, and morphological changes that align with the brain's plasticity, which is essential for learning[5]. The family is the primary social unit, playing a vital role at every stage of a child's development. The significance of parental actions is even greater when a child shows developmental deviations[1]. As parents are essential in recognizing symptoms and offering support, love, care, and concern, active parenting for a child with developmental disabilities tends to be prolonged and necessitates a strong commitment to rehabilitation efforts[6]. Based on all the above, the research aimed to survey parents about their methods of obtaining necessary information for therapies, their awareness of early intervention, and their opinions on the role of exercise in their children's development.

Materials and methods

A cross-sectional study was conducted within the "Plavi cvijet" association in Slavonski Brod, Croatia which serves as a community for parents and individuals with disabilities across the broader autistic spectrum. The participants in the study were parents of autistic children who are members of this association. The research took place from January to March 2024. An independently developed questionnaire was used as the research instrument, specifically designed for the parents of children affiliated with the "Plavi cvijet" association in Slavonski Brod. To ensure data protection and research transparency, the survey created using Google Forms was completely anonymous. The total number of respondents was 36. Respondents provided voluntary consent to participate at the beginning of the survey, confirming their understanding of the instructions outlined in the survey description. A request for approval was submitted before the research and received approval from the ethical committee of the "Plavi cvijet". The anonymous survey for this thesis comprised a total of 24 questions. In addition to collecting data on parents' sociodemographic data, two groups of data key to this research were examined: questions related to the assessment, time needed to determine the diagnosis and the beginning of the child's therapeutic procedure and questions about parents' knowledge and opinions about early intervention. All questions were clearly formulated without ambiguous responses that might confuse participants. The questions are relevant and cover aspects of the target concept. To establish the validity and reliability of the survey questionnaire, Cronbach's alpha methods were utilized, and the interconnections within and between groups of questions were examined. Cronbach's Alpha for the group of questions about time needed to determine the diagnosis and the beginning of the child's therapeutic procedure is 0.75 which indicates good internal consistency between questions. Most of the questions in this group show moderate to strong positive correlations (r=0.55-0.65), indicating a good connection between the questions. Cronbach's Alpha for the second group of questions related to parents' knowledge and opinions about early intervention amounts 0.85 which indicates very good internal consistency. Moderate to strong positive correlations (r=0.50-0.65)suggest that these questions are related and measure similar aspects. Determining the correlation between the examined groups resulted in a moderate to strong positive correlation (r=0.65). This result shows that there is a significant relationship between the total scores of both groups, which suggests that the constructs are interrelated.

After the data was collected, the obtained results were grouped and statistically processed. Data are presented as absolute (N) and relative frequency (%). Differences between variables were tested with the Chi-squared test ($\chi 2$ test). The statistical program Sigma Plot v.12 (Systat Software, Inc, Chicago, USA) was used for statistical analysis. The SPSS program was utilized to assess the questionnaire's reliability through Cronbach's alpha and the correlation between groups of questions.

Results

In Table 1. are presented the demographic data of the respondents (gender, age and place of residence).

Table 1. General information about the respondents
Tablica 1. Opće informacije o ispitanicima

Gender	**N (%)**
Male Female	2 (6) 34 (94)
Age	
20-30 31-40 41-50 > 51	4 (11) 14 (39) 15 (42) 3 (8)
Place of residence	
City Village	24 (67) 12 (33)

The highest percentage of observed changes in developmental deviation occurred between the ages of one and two years (42%, P = 0.046). As the first sign of deviation in development, parents state in the largest percentage (61%) the absence of speech. Given that mothers are present with their children for most of their growing up, it is not surprising that they (89%, P<0.001) noticed the first signs of deviation in the developmental phase. A significant difference was observed in the long period of obtaining the diagnosis of ASD from the observation of the first symptoms, which is longer than one year (72 %, P<0.001). On the other hand, no significant difference was found in the time of children's involvement in therapeutic processes after diagnosis (P = 0.88) (Table 2).

Table 2. Noticing the first symptoms of developmental deviation, diagnosis and the beginning of therapy
Tablica 2. Uočavanje prvih simptoma razvojnih odstupanja, dijagnoza i početak terapije

		N(%)	χ2	P
The age of the child when the first signs of deviation were observed	6 months - 1 year	9 (25)	8	0.046
	1-2 years	15 (42)		
	2-3 years	9 (25)		
	3-4 years	3 (8)		
The first sign of deviation in development	Motor difficulties	6 (17)	25.56	<0.001
	Absence of speech	22 (61)		
	Avoiding eye contact	5 (14)		
	Lack of socialization	3 (8)		
The person who noticed the first symptoms	Mother	32 (89)	78.44	<0.001
	Father	1 (3)		
	Both parents together	2 (5)		
	Health worker	1 (3)		
Time from first symptoms to diagnosis	Less than a month	1 (3)	45.11	<0.001
	From 1-6 months	2 (6)		
	More than 6 months	7 (19)		
	More than a year	26 (72)		
Time from diagnosis of autism to initiation of therapy	Less than a month	10 (28)	0.67	0.88
	From 1-6 months	10 (28)		
	More than 6 months	7 (19)		
	More than a year	9 (25)		

N (%) - absolute (relative) frequency, χ2 - Chi-Square test, P<0.05

The "Plavi cvijet" association focuses on providing therapy and counseling for ASD, with the majority of parents (67%) learning about the association through consultations with professionals such as doctors, therapists, and other team members. Children can begin participating in the association's programs as early as six months of age, with the largest percentage starting at six years old (47%, P<0.001) (Table 3).

67% of parents confirmed that they were familiar with the concept of early intervention (P<0.001) and that they mostly educated themselves via the Internet (42%) and in conversation with experts (39%). The largest percentage (53%) of parents are satisfied with the level of information they receive about the characteristics of autism (Table 4).

Table 3. Information and involvement associations competent in working with ASD children
Tablica 3. Informiranost i uključenost u udruge nadležne za rad s djecom s ASD-om

		N (%)	χ2	P
Information about the existence and importance of the "Plavi cvijet" association	During a conversation with a professional (e.g. doctor, therapist)	24 (67)	66.00	<0.001
	Social networks	3 (8)		
	Parents of children on the autism spectrum	4 (11)		
	Health visitor	1 (3)		
	Relatives	3 (8)		
	The website of the association	1 (3)		
Age of the child when joining the work of the association	6 months - 1 year	2 (6)	28.00	<0.001
	1-2 years	1 (3)		
	2-3 years	5 (14)		
	3-4 years	7 (19)		
	5-6 years	4 (11)		
	6 years and older	17 (47)		

N (%) - absolute (relative) frequency, χ2 - Chi-Square test, P<0.05

Table 4. Awareness of early intervention and characteristics of autism
Tablica 4. Svijest o ranoj intervenciji i karakteristikama autizma

		N(%)	χ2	P
Familiarity with the concept of early intervention	Yes	31 (67)	45.17	<0.001
	No	2 (8)		
	I'm not sure	3 (11)		
Awareness of early intervention in the autism spectrum	During the conversation with the expert	14 (39)	25.57	<0.001
	During conversations with other parents	2 (5)		
	Internet	15 (42)		
	Books	3 (9)		
	Professional Education	2 (5)		
Satisfaction with being informed about the characteristics of autism	Yes	19 (53)	11.17	0.003
	No	3 (8)		
	Partially	14 (39)		

N (%) - absolute (relative) frequency, χ2 - Chi-Square test, P<0.05

24 parents indicated that, alongside therapists, they frequently support their child's development through various active forms of exercise (67%). Furthermore, parents view their participation in the therapy process as highly important (69%) and express general satisfaction with their level of education regarding the benefits of the therapies used in the treatment of ASD (42%) (Table 5).

Parents showed satisfactory knowledge about the stages of motor learning and developmental skills, which speaks in favour of their great involvement in the entire process of therapy and exercises applied to their children (Table 6).

Table 5. Parents' opinions on the importance of therapeutic processes for the treatment of autism spectrum disorders
Tablica 5. Mišljenja roditelja o važnosti terapijskih procesa za liječenje poremećaja iz autističnog spektra

		N(%)	χ2	P
Parental aspiration to stimulate the child's development by carrying out exercise activities	Often	24 (67)	20.67	<0.001
	Moderately	10 (28)		
	Rarely	2 (5)		
Parents' opinion on the importance of their involvement in the therapy process	I completely agree	25 (69)	62.14	<0.001
	I agree	8 (22)		
	I neither agree nor disagree	2 (6)		
	I don't agree	1 (3)		
	I completely disagree	0 (0)		
Satisfaction with the level of education about the benefits of therapy	I completely agree	14 (39)	30.14	<0.001
	I agree	15 (42)		
	I neither agree nor disagree	7 (19)		
	I don't agree	0 (0)		
	I completely disagree	0 (0)		

N (%) - absolute (relative) frequency, χ2 - Chi-Square test, P<0.05

Table 6. Knowledge of the stages of motor learning and developmental skills
Tablica 6. Razumijevanje faza motoričkog učenja i razvojnih vještina

		N(%)	χ2	P
Well-developed gross motor skills are an important prerequisite for	Crawling, walking and jumping	8 (22)	12.66	0.001
	Development of graphomotor skills, writing and neat handwriting	6 (17)		
	Both	22 (61)		
If the child has difficulties during activities such as grasping objects with hands, unbuttoning/fastening buttons or tying shoelaces, it indicates difficulties in	Fine motor skills	24 (67)	18.67	<0.001
	Gross motor skills	4 (11)		
	Both	8 (22)		
Active participation in a meaningful activity (the child actively participates when exposed to a certain situation) implies	Sensory integration	15 (42)	22.00	<0.001
	Sensory stimulation	2 (6)		
	Both	17 (46)		
	Not one	2 (6)		

N (%) - absolute (relative) frequency, χ2 - Chi-Square test, P<0.05

Discussion

The global prevalence of children with ASD is increasing, as indicated by epidemiological studies, with variations influenced by geographical location, screening methods, and diagnostic criteria. Established in 2000, the Autism and Developmental Disabilities Monitoring Network (ADDM) reports that, according to the latest data from the Centers for Disease Control and Prevention in the United States from 2020, approximately one in 36 children aged 8 was identified with ASD. This condition was also found to be nearly four times more common in boys than in girls. Regarding race, available data by Maenner et al. revealed for the first time that the prevalence of ASD in white children (2.4%) at age 8 is lower compared to that in black children (2.9%), who exhibit a higher likelihood of also experiencing intellectual difficulties[7]. However, it is important to note that these findings do not negate the ongoing rise in identified cases of ASD among Caucasian children and girls[7]. Communication difficulties in children with autism are the most prevalent issues and begin from an early age, with almost all children with ASD showing some form of disruption in this area. Specifically, Bujas Petković et al. in their study describe that communicative deficits encompass challenges in verbal and non-verbal communication, underdeveloped expressive language, delays in spoken language, difficulties in grasping concrete or abstract concepts, and a lack of spontaneous play involving imitation or pretend scenarios[1]. For these children, speech tends to be stereotyped, emotionless, slow, and often includes inarticulate words[1]. Additionally, the inability to engage in social interactions is linked to symptoms of impaired non-verbal behavior, such as avoidance of eye contact, limited facial expressions, gestures, and body posture. There is often a failure to develop age-appropriate relationships with peers, along with underdeveloped empathy, social skills, and a lack of emotional and social reciprocity[1]. Stereotyped behaviors are observed in nearly 90% of children with ASD, characterized by repetitive and restricted patterns of behavior, activities, and interests. Such behaviors may manifest as abnormal vestibular reactions, including monotonous swaying, jumping, and spinning in circles without experiencing dizziness[1]. Furthermore, autistic children often exhibit a preference for routine, engage in specific rituals, resist changes, and may fixate on particular objects, the removal of which can trigger intense reactions[1,8].

Sensory development issues, particularly relating to the sensory system, can be seen in behaviors like covering the ears and squinting. In these instances, a paradoxical reaction may occur, where a child with ASD closes their eyes in response to loud sounds while covering their ears when faced with strong visual stimuli. This behavior indicates a disorder in the central organization of sensations. Parental worries about deviations in communication and social development, as well as stereotyped movements, are supported by numerous studies on ASD. Specifically, key warning signs indicating the need for consultation about a possible ASD diagnosis include the absence of communicative gestures and "babbling" in the first year of life, along with a lack of words and their combinations by 18 months[9]. Language delays are often the first concern for parents across different cultures. A study conducted by Buffle et al. found that parents most commonly recognized the absence of speech as the primary indicator of a developmental disorder, especially in cases of ASD[10]. Similar findings have emerged from other research; for example, Budisteanu et al. reported that nearly 95% of parents sought medical advice due to speech delays or absence[11]. A study by De Giacomo et al. revealed that language delay was the initial symptom identified in 53.7% of cases[12]. Supporting this, our cross-sectional study found that the majority of parents (61%) recognized the absence of speech as the first developmental deviation, aligning with the primary diagnostic criterion. Additionally, 17% of respondents noted stereotyped movements, another key diagnostic criterion. Interestingly, the third criterion, lack of socialization (a common deficit in various cultures) was recognized as the first sign by only three parents (8%). Parents can often recognize warning signs as early as six months, although these deviations become more apparent after the first year. Symptoms observed before this age primarily relate to sensory processing disorders, which can include both reduced and heightened sensitivity across all seven sensory modalities. For instance, children exhibiting reduced sensitivity may fixate on strong visual stimuli, show preferences for certain sounds and smells, exhibit diminished reactions to pain, and enjoy intense flavors. In terms of motor skills and proprioception, they often walk on their toes and display clumsiness, while vestibular issues may manifest during activities like swinging or spinning, making it difficult for them to maintain balance.

Conversely, heightened sensitivity may cause them to become overwhelmed by visual input, with eye contact potentially causing discomfort or pain. They may be irritable in response to certain sounds or overwhelming smells and prefer milder flavors. Impaired proprioception can lead to rough play, and difficulties with balance can be indicative of vestibular processing issues[9,13]. Changes in the visual and parietal lobes, which are involved in sensory information processing, may help explain these increased sensitivities[14].

Developmental deviations can indeed be detected by a child's 18 month, as indicated by the American Academy of Pediatrics, which recommends initiating screenings at this age. A typically developing child can interpret the intentions of others during this period, unlike a child with ASD[3,15]. Study by Hammas and Bendiouis found that parents typically recognize the initial signs of ASD around 19 months, noting specific behavioral patterns beginning around one and a half years of age[9]. This thesis supports those findings, as 42% of parents reported noticing the first signs of developmental deviations in their child between their first and second year of life.

Parents play a vital role in supporting their children's development, often being the first to notice any deviations[16]. Mothers, often seen as primary caregivers, typically identify developmental issues early on, a finding confirmed by this study (89%). However, research on the involvement and psychological functioning of fathers with children who have developmental disabilities, especially ASD, is still limited[16]. Kul et al. study underscored the significance of paternal involvement, revealing that higher educational attainment and medium-high socioeconomic status among fathers were linked to earlier ASD diagnoses[17]. The process of accepting a diagnosis and adapting to the new situation is a critical and individual moment for parents, often filled with emotions such as fear, despair, pain, and stress[1,6]. Diagnosing ASD in the first year of life is particularly challenging due to the numerous developmental changes that occur during this period, influenced by various factors and clinical presentations. Communication and social behaviors are still maturing, and symptoms typically become more apparent after 12 months[2]. Experts recommend against diagnosing children younger than this age, suggesting that the optimal time for diagnosis is from two years onward, while closely monitoring their mental age. Specifically, to make a diagnosis, which begins with screening for three diagnostic criteria, any deviations should be less pronounced in relation to their expected mental age[18]. The study by van 't Hof et al. indicated that the mean age at diagnosis was 60.48 months, with a range from 30.90 to 234.57 months, while studies focusing solely on children aged 10 years and younger reported an average of 43.18 months, ranging from 30.90 to 74.70 months[19]. Budisteanu et al. noted that ASD is typically diagnosed during the child's third and fourth year of life[11]. In Croatia, the National Framework for ASD screening and diagnosis for children aged 0 to 7 years states that the recommended interval from the first observation of symptoms to diagnosis is three months, yet the actual time taken for the entire diagnostic process is six months[20]. Research revealed that the majority of parents (72%) experienced long waits for confirmation of an ASD diagnosis after noticing the initial symptoms. This highlights deficiencies in the diagnostic process within Croatia. The challenges associated with this issue in Croatia, as noted in the literature, are largely attributed to a lack of necessary tools for the diagnostic process, including standardized measuring instruments to assess the development of children up to seven years of age. Additionally, the centralization of diagnostic services contributes to these challenges, exacerbated by a shortage of qualified professionals trained to utilize these instruments[20].

The findings of our research regarding the time from ASD diagnosis to the start of therapy did not show a statistically significant difference, as an equal proportion of parents reported waiting less than one month (28%) and up to six months (28%). Kurbalić has similar results to our study, indicating that the average time from diagnosis to the beginning of therapeutic interventions was 5.25 months[20]. These results highlight the importance of promoting proactive engagement among the general public and educational staff. However, it is concerning that 25% in our study had to wait over a year for therapy to commence, which is a troubling statistic. Once a diagnosis is established, it is crucial for both the child and parent to engage in an effective therapeutic process and become involved with associations that specialize in the required form of therapy.

Given that professionals with formal health-related education — such as doctors, pediatricians, psychologists, therapists, speech therapists, and educational rehabilitators — typically oversee the therapeutic process, it is not surprising that the majority of parents (67%) received direct information about associations during consultations. This distribution of responses is significant, indicating that parents largely were not left to navigate the search for a professional rehabilitation institution for their children with ASD on their own.

An essential aspect is the active participation of family members, not just the autistic child. This approach fosters a partnership between parents and professionals, aimed at providing support and assistance to the family, enhancing understanding of the situation, and improving knowledge, skills, and abilities to address the child's developmental needs while preventing further difficulties. The early childhood development support program commences after identifying developmental disorders and establishing the need for assistance. It employs methods tailored to the child's psychophysical requirements and utilizes appropriate equipment and resources[4,21]. Early intervention is an effective model for promoting functional outcomes, independence, and socialization in children with developmental disabilities.

It requires interdisciplinary collaboration among experts in physiotherapy, rehabilitation, psychology, speech therapy, and social work, who provide services both in early intervention centers and in the child's natural environment, such as homes and schools[22,23]. Study by Verger et al. found that interventions in the child's natural environment offer greater benefits, such as better family communication and a deeper understanding of children's needs, compared to those conducted in specialized centers[23].

The Rojas-Torres study highlights how parental involvement in early intervention not only improves early ASD warning signs in children but also supports skill development and later academic success[24]. In this study, 42% of parents noticed developmental deviations in their children between the first and second years of life, and 67% were familiar with the concept of early intervention. Similarly, Bent's study found that most parents had positive impressions of early intervention programs[25]. Participation provided them with a sense of security, protection, gratitude, and empowerment, likely due to their strong understanding of early intervention's benefits. However, 11% of parents were unsure about their familiarity with early intervention, possibly due to the changing terminology over time. The Crutchfield et al. study indicated a need for greater awareness among parents, emphasizing the importance of face-to-face promotion of early intervention services [26]. However in our study revealed no significant difference in how parents accessed information, as most used the internet (42%) and received information from professionals (39%) to a similar extent. Despite the ease of information access through modern media, critical evaluation of sources is necessary due to the prevalence of misinformation and stereotypes[27]. In this research, 53% of participants responded "yes" and 39% "partially" when asked about their satisfaction with being informed about autism characteristics. These results align with previous findings showing that many parents recognized developmental deviations early and were informed about early intervention and available therapies. The study by Borovec et al. found that 99% of respondents were aware of ASD, with no significant differences between the experts. It highlighted the ongoing need to raise awareness about ASD among both the general public and professionals, as informed understanding improves the quality of life for individuals with ASD[27]. However, earlier studies, especially in low-income countries, revealed a lack of ASD awareness. Heys et al. demonstrated a significant lack of awareness about ASD among both parents and experts[28].

Parental involvement is crucial in supporting a child's progress through exercise. Our study found that 67% of parents were eager to encourage their child's development through regular exercise, while only 5% reported doing so rarely. The study by Leadbitter et al. demonstrated that parental participation in pediatric communication therapy improved parent-child communication, enhanced family life quality, and reduced ASD symptoms[29]. However, some parents, as noted in Esentürk's study, avoid exercise activities due to fears of causing harm or making mistakes[30]. This lack of knowledge may explain why some parents reported rarely engaging in exercise therapy. Study by Agard et al. found that parental involvement, whether through participation, facilitation or knowledge of therapeutic processes, significantly contributes to the development of physical activity and motor skills in their children[31]. When asked if they felt sufficiently educated about the benefits of therapy, 42% of parents agreed, and 39% strongly agreed, indicating a high level of awareness among parents. Esentür indicated that parents expressed positive attitudes toward engaging in physical activities with their children[30]. They emphasized the benefits of physical activity for health, psychological, and social development, and expressed a desire for more knowledge on how these activities benefit children with ASD[30]. Children with developmental disabilities, particularly those with ASD, often struggle to spontaneously acquire simple movements, making it challenging to develop more complex motor skills. Exercise plays a crucial role in helping children acquire these motor skills, which are essential for engaging in play and normal development[32]. Regarding fine motor skills, 67% of parents connected difficulties in grasping objects, unbuttoning buttons, or tying shoelaces to fine motor skills, demonstrating greater familiarity with this term. However, 22% of parents still indicated that these challenges related to both gross and fine motor skills. The findings showed that while 62% of mothers were relatively familiar with gross motor skills, only 40% correctly answered questions about fine motor skills, such as the appropriate age for a child to reach for a toy. Additionally, only 31% knew when to seek help if a child was struggling to grasp objects. The study by Saleh et al. also revealed a significant lack of knowledge among mothers regarding their child's communication and social development[33]. Researchers suggest that improving health education programs on child development may enhance parental understanding, addressing the knowledge gaps identified in these studies[33].

The limitations of this study involve a small sample size, which should be expanded in future research to ensure more representative outcomes. Additionally, it is recommended to incorporate additional questions into the survey questionnaire to acquire a more detailed overview of the situation related to the mentioned. This

approach would allow for a more precise understanding of the specific challenges and needs of parents regarding therapeutic processes for children with an ASD.

Conclusion

Parents of children with ASD demonstrate a proactive commitment to their children's therapy and development. Their collaboration with healthcare professionals and active engagement in the therapeutic process highlight the essential role they play in supporting their children's progress. This dedication and understanding of therapeutic practices reflect their unwavering support and involvement in fostering their children's growth and well-being.

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