ORIGINAL ARTICLE / ÖZGÜN ARAŞTIRMA

DOI: 10.4274/tjcamh.galenos.2021.29494

Turk J Child Adolesc Ment Health 2022;29(3):159-66

The Relationship Between the Use of Complementary and Alternative Therapies in Children with Autism Spectrum Disorder and Quality of Life, Hopelessness, Depression, and Vaccine Refusal in Their Caregivers in Turkey

Türkiye'de Otizm Spektrum Bozukluğu Olan Çocuklarda Tamamlayıcı ve Alternatif Tedavilerin Kullanımı ile Bakım Verenlerinde Yaşam Kalitesi, Umutsuzluk, Depresyon ve Aşı Reddi Arasındaki İlişki

Özge Gizli Çoban[1], Arif Önder[1], Aslı Sürer Adanır[1], Aziz Kara[2], Börte Gürbüz Özgür[3], Merve Aktaş Terzioğlu[4], Gizem Müjdecioğlu Demir[5], Zehra Ece Randa[6], Aybike Erdem[1], Serhat Nasıroğlu[1]

[1]Akdeniz University Faculty of Medicine, Department of Child and Adolescent Psychiaty, Antalya, Turkey
[2]Afyonkarahisar Health Sciences University Faculty of Medicine, Department of Child and Adolescent Psychiatry, Afyon, Turkey
[3]Muğla Training and Research Hospital, Clinic of Child and Adolescent Psychiatry, Muğla, Turkey
[4]Pamukkale University Faculty of Medicine, Department of Child and Adolescent Psychiatry, Denizli, Turkey
[5]University of Health Sciences Turkey, Van Training and Research Hospital, Clinic of Child and Adolescent Psychiatry, Van, Turkey
[6]University of Health Sciences Turkey, İzmir Tepecik Training and Research Hospital, Clinic of Child and Adolescent Psychiatry, İzmir, Turkey

ABSTRACT

Objectives: Complementary and alternative medicine (CAM) is widely used for individuals diagnosed with autism spectrum disorder (ASD). In our study, it was aimed to evaluate the use of CAM treatments in children with ASD and to determine the relationship between the CAM treatment methods and hopelessness, depression, and quality of life in the caregivers of patients with ASD.

Materials and Methods: One hundred-twenty six patients with a confirmed diagnosis of ASD was included in the study. All patients were evaluated in detail in terms of the CAM methods used. The caregivers of the child with ASD were evaluated in terms of the quality of life, depression, hopelessness, and their opinions about the vaccine.

Results: When the caregivers who did and did not use CAM were compared in terms of the scale scores, no difference was found. Vaccine refusal was more common in the parents of children who received CAM.

Conclusion: The preference of CAM use was not directly related to the quality of life, depression, and hopelessness of the caregiver.

Keywords: Complementary and alternative medicine, autism spectrum disorder, vaccine, quality of life, depression

ÖZ

Amaç: Tamamlayıcı ve alternatif tıp (TAT) yöntemleri, otizm spektrum bozukluğu (OSB) tanısı konulan bireyler için yaygın olarak kullanılmaktadır. Çalışmamızda OSB'li çocuklarda TAT tedavilerinin kullanımının değerlendirilmesi ve OSB'li hastaların bakım verenlerinde TAT tedavi yöntemleri ile umutsuzluk, depresyon ve yaşam kalitesi arasındaki ilişkinin belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: OSB tanısı olan 126 hasta çalışmaya dahil edildi. Tüm hastalar kullanılan TAT yöntemleri açısından detaylı olarak değerlendirildi. OSB'li çocuğun bakım verenin yaşam kalitesi, depresyon, umutsuzluk ve aşı ile ilgili görüşler açısından değerlendirildi.

Bulgular: TAT kullanan ve kullanmayan bakım verenler ölçek puanları açısından karşılaştırıldığında fark bulunmadı. TAT uygulanan çocukların ebeveynlerinde aşı reddi daha yaygındı.

Sonuç: TAT kullanımı tercihinin, bakım verenin yaşam kalitesi, depresyon ve umutsuzluğu ile doğrudan ilişkili olmadığı görülmüştür.

Anahtar Kelimeler: Tamamlayıcı ve alternatif tedavi, otizm spektrum bozukluğu, aşı, yaşam kalitesi, depresyon

Address for Correspondence/Yazışma Adresi: Özge Gizli Çoban, Akdeniz University Faculty of Medicine, Department of Child and Adolescent Psychiaty, Antalya, Turkey

Phone: +90 533 633 99 09 **E-mail:** ozgegizli87@gmail.com **ORCID:** orcid.org/0000-0003-4533-105X

Received/Geliş Tarihi: 25.05.2021 **Accepted/Kabul Tarihi:** 02.08.2021

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Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder manifesting with two groups of core symptoms, including developmental impairments in communication and reciprocal social interactions and atypical patterns of play, behavior, and sensorimotor responses. These symptoms are present from early childhood and limit or impair everyday functioning.[1] In ASD, psychiatric and neurological comorbidities such as attention-deficit/hyperactivity disorder, anxiety disorder, depression, and epilepsy, are frequently observed along with these core symptoms. The diagnosis is based on the developmental history taken from the family and the physician's observation of the relationship of the child with their caregivers.[2,3] ASD prevalence was reported to be 18.5 per 1,000 (one in 54) children aged 8 years, and ASD was 4.3 times as prevalent among boys as among girls.[4]

Disruptive symptoms such as aggression, severe temper tantrums, and self-harm are frequently seen in children with ASD.[5] These symptoms may severely impair a child's functionality both in school and the home environment. In terms of prognosis, 19.7% of individuals with ASD have a good course in adulthood, 31.1% have a reasonable course, and 47.7% have a poor course.[6] Because of the chronic nature of ASD and the lack of a definitive treatment, several alternative treatment methods have been applied and many of them have been claimed to be effective. However, apart from behavioral and educational methods, none of them has been proven to be effective.[7]

Complementary and alternative medicine (CAM) is a heterogeneous spectrum covering ancient to new-age approaches that claim to prevent or treat diseases. As there is no sufficient proof that they are safe and effective, CAM practices cannot be defined as a part of conventional medicine. In addition, while complementary interventions can be applied together with conventional treatments, alternative interventions are used instead of conventional medicine.[8,9] The use of CAM has increased significantly in the last 20 years. In a study, among a sample of children with ASD in 18 European countries, 47.0% of parents reported having tried any CAM approach.[10] In another study, almost 88.0% of the sample with ASD reported that they had either used CAM in the past or had recently used some type of CAM.[11]

Alternative treatments are used for all chronic diseases that do not have a definitive treatment. CAM is also widely used in our country in individuals diagnosed with autism.[12] Complementary methods can be classified as nutritional (e.g. herbs, dietary supplements, special diets), psychological (meditation, hypnosis, music therapies) and physical (acupuncture, massage) approaches.[13] However, the effectiveness of such a treatment is controversial. In a randomized controlled study, some of these treatments were supported by little evidence, but a significant portion was classified as not recommended or ineffective.[14] Current evidence for the efficacy of gluten and/or casein exclusion diets is poor.[15] Some positive evidence was reported for massage[16] and horse-riding.[17] Despite the limited evidence, CAM treatments are popular in ASD. Despite numerous studies trying to understand the reasons for this situation, no definite cause has been determined.[18]

Raising a child with ASD can be challenging for many parents and may potentially impact their personal health. Parents of a child with ASD were significantly more likely to have a diagnosis of depression than parents of children without ASD.[19,20] According to a study in our country, maternal and paternal psychopathology may be associated with CAM interventions.[20] In a study investigating the parents' experiences of using CAM focusing on the perceived factors, "unmet needs" and "chasing hope" were found to be related factors that increase the tendency for parents to prefer CAM.[21]

The debate that vaccines cause autism has prompted great confusion in society. In 1998, Wakefield et al.[22] published a case series showing that the measles, mumps, and rubella vaccine could cause behavioral regression and autism. The article led to a serious prejudice against vaccines and a decrease in vaccination rates even though the study was conducted with only 12 children, the study was uncontrolled in design and speculative in nature.[23] Immediately after this study, studies disproving this hypothesis were conducted.[24,25] The fear that vaccines might cause ASD in the community of individuals with autism and their caregivers, as well as the lay public persisted, despite the strong scientific evidence on this issue.[26]

In most of the studies investigating the role of CAM in autism, the reasons for the use of CAM were mostly investigated in terms of the severity of the disease and sociodemographic characteristics.[11,27,28] In our study, we will investigate the use of CAM treatment methods and the reasons for use in patients with ASD in terms of hopelessness, depression and quality of life in parents. We will also examine the relationship between the use of CAM and the opinions of families about vaccines.

Materials and Methods

Participants

The lifetime use of CAM therapies of patients who had been diagnosed with ASD for at least one year and who presented to the child psychiatry clinics in six cities between August 2019 and July 2020 was evaluated. The ASD diagnoses of patients were re-evaluated by a child and adolescent psychiatrist according to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) diagnostic criteria. DSM-5 severity index was used to indicate the severity of autism. Patients with a confirmed diagnosis of ASD (n=126). To keep the sample size large, we also included those with concomitant mental retardation and medical diseases such as epilepsy.

Sociodemographic characteristics of the study participants, including age, sex, educational and income levels, and home cities, were recorded during interviews with their mothers. The education and therapies their child received, the drugs they used were also recorded. The CAM methods were explained

to the families in detail, and they were asked if they had tried one or more of these methods. Dietary approaches, religious treatments, vitamins, leeches or cupping, animal therapies, neurofeedback, chelation, homeopathy, cortexin, acupuncture, hypnosis, fungicides, cannabis oil, sports, ozone therapy, stem cell therapy, yoga, hyperbaric oxygen therapies were explained to the parents and their past/current use of either one was questioned. We specifically chose the ones who were used against core symptoms of ASD among these treatments and we excluded the ones used for other disorders and/or non-core symptoms of ASD (e.g aggression, hyperactivity, sleep problems etc.). Sensory integration treatment methods (ergotherapy/sensory integration/auditory integration) was not evaluated among the CAM methods due to the increasing evidence that they may be useful in the management of ASD. Caregivers were also asked about their thoughts on vaccines, and whether they asked a child psychiatrist's advice on CAM was also noted.

The Board of Ethics of the Faculty of Medicine of Akdeniz University provided approval for the study (decision number: 363, date: 10.06.2022). All parents taking part in the study were provided information about the study before the study was started and each gave their written consent. The study complied with the Helsinki Declaration.

Measures

The Quality of Life in Autism Questionnaire (QoLA): QoLA is a disorder-specific scale developed by Eapen et al.[29] to evaluate the quality of life of parents of children with autism. The Turkish validity and reliability study of the scale was conducted by Gürbüz Özgür et al.[30]. The scale has two parts: In part A, the quality of life of the parents in the last month, and in part B, the effect of the difficulties experienced by the child on the parent in the last month are questioned. Part A contains 28 items and part B contains 20 items. Each part is scored separately. Increased scores obtained from the subscales indicate that the parents' quality of life is better and they cope better with the problems.

Beck Depression Inventory (BDI): The BDI is a self-report scale consisting of 21 items. The scale was used to evaluate the depression levels of the parents. The scale was developed by Beck. The Turkish validity and reliability study of the scale were investigated by Hisli.[31-33] It is assumed that as the score obtained from the scale increases, so does the level of depression of the individual.

Beck Hopelessness Inventory (BHI): For evaluating hopelessness in the parents, the BHI was used. It is a 'yes/no' scale consisting of 20 items.[34] Its reliability and validity in the Turkish language were proven by Durak and Palabıyıkoğlu[35] Higher scores indicate higher levels of hopelessness.

Statistical Analysis

The Statistical Package for the Social Sciences for Windows 20.0 (IBM Corp, Armonk, NY) program was used for the statistical evaluations. Categorical variables are presented as frequencies and percentages. Normally and non-normally distributed data are presented as mean and standard deviation. To determine the normality of the distribution of continuous variables, the Kolmogorov-Smirnov test was used. Student's t-test or the Mann-Whitney U test was performed for bivariate comparisons depending on the test assumptions. More than two independent means were compared using analysis of variance (ANOVA) and afterwards using the post hoc Tukey test. The chi-square test was used to compare categorical data. $P<0.05$ was accepted as statistical significance.

Results

The clinical and demographic characteristics of the 126 patients are summarized in Table 1.

According to the statements of the parents, 57 of the 126 patients (45.2%) received CAM therapies, and 69 (54.8%) did not. Twelve (21.1%) of the parents of the patients who received CAM stated that they consulted a child and adolescent psychiatrist about this treatment, and 73.7% (n=42) stated that they did not. Three parents reported that they did not remember the details. When asked whether they were informed about insufficient evidence before these treatments were used, 24.6% (n=14) answered affirmatively while 68.4% (n=39) provided negative answers. An additional four reported that they did not remember the specifics.

Thirty (23.8%) of the parents reported that they had been previously asked by a child and adolescent psychiatrist about whether they had used CAM, and 93 (73.8%) stated that such a question had not been asked by a child psychiatrist.

Ninety-six percent of the participants (n=120) stated that their children had their vaccinations regularly. When asked whether vaccines caused autism, 34.1% (n=43) replied affirmatively while 65.0% (n=83) provided negative answers. When inquired on the possibility of vaccination for another potential child, 17.0 % (n=21) replied negatively.

The most common alternative treatment method was determined as diet/nutritional therapies, followed by religious treatments, vitamin supplements, leeches/cupping, and animal therapies, respectively. The frequency of CAM methods is shown in Table 2.

A comparison of the baseline and sociodemographic characteristics of groups that received CAM treatments or not are demonstrated in Table 3.

There was no significant difference between those who received and did not receive CAM treatment in terms of age, gender, parental education level, monthly income, use of psychotropic drugs, benefits from special education and autism severity. The rate of special education teachers and child neurologists as a source of information about ASD was significantly higher in those who received CAM treatment than in those who did not. To the question of whether those who received CAM treatment were told that there was not enough evidence on these treatments, 26.4% of the participants said yes, and 73.6% said

no. No relationship was found between accompanying mental retardation and epilepsy and CAM use.

When the children were evaluated in terms of accompanying mental retardation, 54.4% of the group receiving CAM had accompanying mental retardation, and this rate was 39.1% in those who did not. However, the difference did not reach a statistically significant level.

When the groups with and without CAM were compared in terms of the QoLA, BDI scores, and BHI scores, no significant difference was found between the groups. The comparison of the groups in terms of scale scores is shown in Table 4. When we compared the scale scores according to whether there was mental retardation or not, only the QoLA score was lower in the group with mental retardation than in those without mental retardation. When we compared the scale scores according to whether epilepsy was accompanied or not, there was no difference between the groups. When the patients were divided into 3 groups according to the severity of autism, when the groups were evaluated in terms of scale scores, a significant difference was found only in the QoLA scale part B.

The rates of the parents who think "vaccines cause autism" and reported "I wouldn't have my next child vaccinated" were significantly higher in the CAM receiving group. The opinions of the parents about the vaccination of their children are shown in Table 5.

Table 1. Clinical and demographic characteristics of children with Autism Spectrum Disorder (ASD) participating in the study

Age (mean ± SD) (year)	7.58±3.58
Sex (n=126)*	
Male	101 (80.16%)
Female	25 (19.54%)
Mother's education*	
- Primary school	43 (37.7%)
- Secondary school	19 (16.7%)
- High school	24 (21.1%)
- University	28 (24.6%)
Father's education*	
- Primary school	37 (32.5%)
- Secondary school	14 (12.3%)
- High school	25 (21.9%)
- University	38 (33.3%)
Family income/month (TL) (mean ± SD)	3,668±2,388
Accompanying mental retardation	
Yes	58 (46%)
No	68 (54%)
DSM-5 symptom severity*	
Level 1 (requiring support)	49 (38.9%)
Level 2 (requiring substantial support)	34 (27%)
Level 3 (requiring very substantial support)	43 (34.1%)
Sources of information*	
- Child and adolescent psychiatrist	89 (70.6%)
- Internet	76 (60.9%)
- Special education teacher	74 (58.7%)
- Other families	42 (33.3%)
- Pediatric neurologist	20 (15.9%)
History of educational and behavioral techniques*	116 (92.1%)
Speech therapy*	15 (11.9%)
Inclusive student*	66 (52%)
Sensory integration*	19 (15.1%)
Average beginning age for special education	3.76±2.40
Benefit from special education*	
Little or none	34 (27.4%)
Mild	45 (36.3%)
A lot	45 (36.3%)

*Values were presented as number (%). ASD: Autism spectrum disorder, SD: Standard deviation, TL: Turkish lira

Discussion

This study aimed to examine factors that contribute to parents' decisions to treat their child with ASD using a complementary or alternative treatment. A few studies have examined the predictors of CAM use in patients with ASD. In a study that compared 169 children with and without CAM in terms of severity of core symptoms, no difference was observed between the groups.[36] However, in a web-based study with 453 participants, a positive significant relationship was found between symptom severity and CAM use in children with ASD.[37] In our study, there was no difference in terms of symptom severity according to the DSM-5 between the groups that did and did not receive CAM, indicating that the reasons for the families to try CAM treatments were independent of the severity of autism symptoms.

There are many studies on CAM use in ASD. In these studies, the rate of CAM use in children with ASD varied between 28.0% and 95.0%.[18] There are differences in terms of CAM usage rates between countries and even cities in the same country.[14] One study reported that 30.0% of children with ASD started using CAM methods before they were diagnosed.[38] The rates reported in studies vary according to the differences in the definition of CAM, and the design of the studies (e.g. questioning the lifelong use of CAM or cross-sectional, evaluation through treatment records, face-to-face with families or via telephone, selected

Table 2. Complementary and alternative medicine (CAM) methods used by the participants

CAM method	n (%)
Dietary approaches	33 (26.2%)
Religious treatments	18 (14.3%)
Vitamin supplements	15 (11.9%)
Leeches or cupping	8 (6.3%)
Animal therapies	7 (5.6%)
Neurofeedback	5 (4%)
Chelation	3 (2.4%)
Homeopathy	2 (1.6%)
Cortexin	2 (1.6%)

Acupuncture, hypnosis, fungicides, cannabis oil, sports, ozone therapy, 1 patient for each, 0.8%; no stem cell therapy, yoga, hyperbaric oxygen therapies. CAM: Complementary and alternative medicine

age group).[18] In our study, lifetime use of CAM was evaluated and found as 45.2%.[12,36,39-41] Reported rates in other studies evaluating lifetime CAM use vary between 39.0% and 71.0%. On the whole, the rate in our study is compatible with the literature in this respect. However, because each study has its own design, it was impossible to directly compare these studies with each other.

Some studies have evaluated the relationship between the educational levels of parents and CAM use. However, the results were conflicting; some reported a correlation between the education levels of parents and the use of CAM[28,37], whereas others found no such correlation.[36] In our study, no significant difference was found between the groups in terms of parental education levels.

In our study, when the groups with and without CAM use were compared in terms of the QoLA questionnaire and BDI, no significant difference was found between the groups that did and did not receive CAM treatments. To the best of our knowledge, this is the first study in the literature to investigate the relationship between CAM use in autism, and hopelessness and quality of life in the parents.

Mothers of children with ASD describe more stress and depression than parents of children with other developmental disorders.[42] Mothers of children with severe symptoms of autism have higher depression levels and a lower quality of life.[43] Theoretically, it can be expected that treatments aimed at reducing the symptom severity of the child will improve the depression, quality of life, and hopelessness of parents. However, in our study, no difference was found between CAM use and the parents' depression, quality of life, and

Table 3. Comparison of patients who received CAM and those who did not, in terms of clinical and demographic characteristics

	CAM (+)	CAM (-)	X^2 or Z or T	p-value
Sex[1,*]				
Male	48 (47.5%)	53 (52.5%)	1.07	0.3
Female	9 (36%)	16 (64%)		
Age[2] (years)	8.24±3.57	7.53±3.58	1.12	0.265
Mother's education[1,*]				
- Primary school	18 (36%)	25 (39.1%)		
- Secondary school	7 (14%)	12 (18.8%)		
- High school	13 (26%)	11 (17.2%)	1.48	0.683
- University	12 (24%)	16 (25%)		
Father's education[1,*]				
- Primary school	17 (34%)	20 (31.3%)		
- Secondary school	4 (8%)	10 (15.6%)		
- High school	12 (24%)	13 (20.3%)	1.58	0.664
- University	17 (34%)	21 (32.8%)		
DSM-5 symptom severity[1,*]				
- Level 1	20 (35.1%)	29 (42%)		
- Level 2	14 (24.6%)	20 (29%)	1.76	0.408
- Level 3	23 (40.3%)	20 (29%)		
Monthly income of the family (Turkish Lira)[3]	3606±2059	3720±2645	-0.65	0.515
Special education history[1,*]	53 (93%)	63 (91.3%)	0.12	0.729
- Speech therapy	9 (16.4%)	6 (9.2%)	1.37	0.239
- Inclusive education	29 (53.7%)	37 (56.1%)	0.07	0.796
- Sensory integration	14 (24.6%)	5 (7.2%)	7.31	0.007
Benefit from special education[1,*]				
- Little or none	19 (33.3%)	15 (22.4%)		
- Mild	21 (36.8%)	24 (35.8%)	2.57	0.227
- A lot	17 (29.8%)	28 (41.8%)		
Weekly special education time (hours)[3]	3.49±3.11	3.37±3.83	-0.96	0.335
Special education beginning age[3]	3.85±2.32	3.68±2.48	-0.84	0.399
Getting information about ASD[1,*]				
- Child and adolescent psychiatry	43 (75.4%)	46 (67.6%)	0.92	0.338
- Special education teacher	40 (70.2%)	34 (50%)	5.23	0.022
- Paediatric neurology	14 (24.6%)	6 (8.8%)	5.71	0.017
- Internet	32 (56.1%)	44 (64.7%)	0.96	0.329
- Other families	22 (38.6%)	20 (29.4%)	1.17	0.279
History of psychotropic medication use[1,*]	35 (61.4%)	34(49.3%)	1.85	0.173

[1]Chi-square Test, [2]T-Test, [3]Mann-Whitney U Test
*Values were presented as number (%), CAM: Complementary and alternative medicine

hopelessness levels. Similarly, a recent study conducted in our country, employment of CAM methods in a sample with ASD was not associated with parental burnout or depression levels.[20] On the other hand, in a study conducted on the effectiveness of CAM methods, most treatments were not recommended and were classified as ineffective.[14] The general ineffectiveness of the treatments may explain the lack of significant change in the scale scores.

In our study, it was determined that the majority of the parents of the patients who received CAM did not consult a specialist before performing these treatments, and most of the child and adolescent psychiatrists who followed the children did not ask the parents about this issue. Often, families start these treatments without obtaining information about the efficiency and adverse effects of the treatment from a specialist. In the study by Bilgiç et al.[12] in our country in 2013, it was stated that only 23.0% of the families with a child with autism discussed with a child and adolescent psychiatrist about CAM. Similarly, this rate was found as 23.8% in our study. In addition, the rate of child and adolescent psychiatrists' questioning the use of CAM in families with children with autism was found as 26.2% in our study. In conclusion, there has been no change in the rate of conversations between child and adolescent psychiatrists and families on this issue in our country for the past 7 years. Physicians in the field should be aware of these treatments are frequently used by families and they should provide consultancy to families so that families use their resources efficiently and ensure that the child's actual treatment and education continue as required.[12]

Moreover, CAM practices can put a financial burden on the family. In the study of Bilgiç et al.[12], it was stated that families spent an average of 2,670 dollars on CAM therapies. Considering that the average monthly income of families in our study is 524 dollars, it is clear that there is a serious cost implication.

In our study, the rate of vaccination was found 94.7% for participants who used CAM treatments and 98.5% for those who did not. In studies conducted in a general population in Turkey in 2018, the vaccinization coverage rate for diphtheria, tetanus, pertussis, hepatitis B, polio, and Haemophilus influenzae type b was found as 98.0%.[44] The rates of vaccination in the general population and in our study group appear similar. However, parents who did not want to vaccinate for their next newborn was increased in both groups that used CAM and did not use CAM; with a higher rate as 28.0% in CAM using group. In general, it can be thought that there may be a distrust of modern medicine in those who use CAM treatments. This distrust has also been associated with vaccine refusal.[45,46] In this respect, both having a child with autism and using CAM increase the possibility of vaccine refusal separately. As a result of misinformation that vaccines cause autism, many families may not want to vaccinate their children. In a study conducted with the caregivers of 16,525 children with ASD, 16.5% of the participants stated that vaccines could cause autism.[26] In our study, when it was asked whether vaccines were related to autism development, 34.1% of the parents answered yes and 65.0% no. When asked whether they would refuse to vaccinate if they had a child again in the future, 17.0% of the participants said "yes". This ratio is very similar to those found by Fombonne et al.[26]. Therefore, as the parents of children with ASD using CAM methods are expected to refuse vaccines more frequently, families should be informed that continuing the child's current vaccines and completing the missing vaccinations is necessary for the health of both the child and the sibling(s) and other children with whom they share the same environment. It should also be emphasized that there is no relationship between vaccines and autism.

There are some strengths in our study. First, the sample is relatively large and represents the patients with ASD from 6 different cities in Turkey. Secondly, it was conducted face-to-face with the parents of children with autism. Thirdly, the diagnosis of autism was confirmed by a child and adolescent psychiatrist before the children were included in the study. Finally, the parents' quality of life, depression, and hopelessness levels were evaluated with valid scales.

Table 4. Comparison of the scale scores of the caregivers of the patients who use CAM or not

	CAM (+) Mean ± SD	CAM (-) Mean ± SD	T or Z	p-value
Parental quality of life part A[1]	62.98±14.05	62.89±15.03	0.31	0.975
Parental quality of life part B[1]	59.60±17.22	64.43±19.94	-1.38	0.169
Hopelessness scale[2]	7.11±5.61	6.59±5.14	-0.43	0.669
Beck Depression Inventory[1]	14.64±8.67	13.20±10.05	0.85	0.399

[1]t-test, [2]Mann-Whitney U Test, SD: Standard deviation, CAM: Complementary and alternative medicine, , T: T score, Z: Z score

Table 5. Relationship between CAM and vaccines according to parental reports

	CAM (+)	CAM (-)	X^2	p-value
Had their children's previous routine vaccinations	54 (94.7%)	67 (98.5%)	1.44	0.230
Think vaccines cause autism	25 (43.9%)	18 (26.5%)	4.16	0.042
Say "I wouldn't have my next child vaccinated."	16 (28.1%)	6 (9%)	7.71	0.005

Chi-square test. Values were presented as number (%), CAM: Complementary and alternative medicine

Study Limitations

The cross-sectional nature of the study made it difficult to establish a cause-effect relationship between CAM and other variables. The fact that the study was conducted only with patients who presented to child psychiatry clinics may have led to a group with less CAM use. In addition, we included patients with medical diseases other than mental retardation and epilepsy order to obtain a large sample size. This may have affected the results. Although we asked whether the patients received psychotropic drug treatment, we did not question the duration of drug use, the content of drug and treatment response.These variables may also affect the tendency to prefer CAM approaches.

Parents sometimes do not share information regarding their use of CAM in their children with their physicians because either they believe the physician is not knowledgeable about these treatments, the physician does not inquire about these treatments, or because they are concerned with their decision to use CAM.[47] For these reasons, it is very important to investigate the use of CAM and other possible causes in the families of patients with autism. According to our study, CAM use was not directly associated with the quality of life, depression, and hopelessness of the parents in our study. However, there is a need for prospective studies to examine the reasons for using CAM methods by considering them separately and examining the factors of interest to parents in a wider perspective.

Conclusion

In our study, it was observed that special education teachers and pediatric neurologists were more preferred by families of children using CAM methods than those who did not as a source of information about ASD. In this respect, because the management of autism requires a multidisciplinary approach, it is necessary for all professionals working with patients with ASD to have knowledge about CAM treatments to guide families correctly. Child psychiatrists should routinely question CAM use with families. Their thoughts about vaccinating their child(ren) should also be questioned, and the fact that there is no evidence of an association between vaccines and autism should be emphasized. As evidence for the majority of these treatments in ASD is still limited, parents should be encouraged to critically evaluate information about the efficacy and possible dangerous side effects of CAM approaches.

Ethics

Ethics Committee Approval: The Board of Ethics of the Faculty of Medicine under Akdeniz University provided approval for the study (decision number: 363, date: 10.06.2022).

Informed Consent: All parents taking part in the study were provided information about the study before the study was started and each gave their written consent.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Ö.G.Ç., A.Ö., Concept: Ö.G.Ç., A.Ö., Design: Ö.G.Ç., A.Ö., Data Collection or Processing: Ö.G.Ç., A.Ö., A.S.A., A.K., B.G.Ö., M.A.T., G.M.D., Z.E.R., A.E., S.N., Analysis or Interpretation: Ö.G.Ç., A.Ö., A.S.A., A.K., B.G.Ö., M.A.T., G.M.D., Z.E.R., A.E., S.N., Literature Search: Ö.G.Ç., A.Ö., Writing: Ö.G.Ç., A.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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