



# Attitudes of the Parents of Children and Adolescents Aged 0-18 with Intellectual Disability to Vaccine

Zihinsel Yetersizliği Olan 0-18 Yaş Arası Çocuk ve Adölesanların Ebeveynlerinin Aşıya Karşı Tutumları

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## Abstract

**Objective:** Studies have shown that individuals with disabilities participate in routine immunization programs less than individuals without any disabilities. This study was carried out to explore the attitudes of parents of children and adolescents aged 0-18 years with an intellectual disability towards vaccination before the COVID-19 pandemic.

**Material and Methods:** This descriptive study was conducted with the parents of 94 children and adolescents aged 0-18 years who were educated in a special training center in İzmir. Socio-demographic Questionnaire and Attitudes towards Vaccination Scale were used as data collection tools for the study. Attitudes towards Vaccine Scale has been developed by Cvjetkovic et al. Ethics approval was obtained from the İzmir Katip Çelebi University Non-Invasive Clinical Research Ethics Committee, and institutional approval was obtained from the institution administration.

**Results:** The rate of parents who stated that they believed that vaccines had serious side effects was 73.4%. The rate of families who had never been vaccinated and thought that the vaccines were ineffective was 14.9%. The parents' total ATVS median score was 43 and they displayed a moderately positive attitude. Those who believed that "vaccines have serious side effects" had the lowest median ATVS score ( $p < 0.005$ ). Median ATVS scores of fully vaccinated parents were higher than those of the parents who did not have any vaccinations and who had incomplete vaccination, and they displayed a more positive attitude ( $p < 0.005$ ). According to the parents' sources of information, ATVS scores were compared ( $p < 0.005$ ), and the median ATVS scores of those who received information from healthcare personnel were higher than those of the parents who received information from other sources ( $p < 0.005$ ).

## Öz

**Giriş:** Yapılan çalışmalar yetersizliği olan bireylerin, yetersizliği olmayan bireylere göre rutin bağışıklama programlarına daha az katıldığını ortaya koymaktadır. Bu çalışma zihinsel yetersizliği olan 0-18 yaş arası çocuk ve adölesanların ebeveynlerinin COVID-19 pandemisi öncesi aşıya karşı tutumlarını belirlemek amacıyla gerçekleştirilmiştir.

**Gereç ve Yöntemler:** Tanımlayıcı tipte yürütülen bu araştırma İzmir ilinde bulunan bir özel eğitim merkezinde eğitim gören 0-18 yaş arası 94 çocuk ve adölesanın ebeveyni ile yürütülmüştür. Çalışmada veri toplama aracı olarak Sosyo-demografik Soru Formu ve Aşıya İlişkin Tutumlar Ölçeği (AİTÖ) kullanılmıştır. AİTÖ Cvjetkovic ve arkadaşları tarafından 2017 yılında geliştirilen, Türkçe'ye Özümit ve Yıldırım Sarı tarafından uyarlanan, 14 maddeden oluşan bir ölçektir. İzmir Katip Çelebi Üniversitesi Girişimsel Olmayan Klinik Araştırmalar Etik Kurulundan etik izin, kurum yönetiminden kurum izni alınmıştır.

**Bulgular:** Ebeveynlerin %73.4'ü aşıların ciddi yan etkileri olduğuna inandıklarını belirtmişlerdir. Ailelerin %14.9'u çocuklarına hiç aşı yaptırmadığını belirtmiş olup aşıların etkin olmadığını düşünmektedirler. Ebeveynlerin toplam AİTÖ medyan puanı 43 olup orta düzeyde olumlu tutuma sahiptirler. "Aşıların ciddi yan etkileri vardır" görüşüne inananların AİTÖ medyan puanı en düşüktür ( $p < 0.005$ ). Tam aşıllı çocukların ebeveynlerinin AİTÖ medyan puanları hiç aşı yaptırmayan ve eksik yaptıranlardan yüksek olup daha olumlu tutum içindedirler ( $p < 0.005$ ). Ebeveynlerin bilgi alma kaynaklarına göre AİTÖ puanları arasında fark olup ( $p < 0.001$ ), sağlık personelinin bilgi alanların AİTÖ medyan puanları diğer kaynaklardan bilgi alan ebeveynlerden daha yüksektir ( $p < 0.005$ ).

**Sonuç:** Bu çalışmada ebeveynlerin %14.9'u zihinsel yetersizliği olan çocuklarına aşı yaptırmadığını, %85.1 (n= 80)'i aşı yaptırdığını bildirmiş-

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**Conclusion:** In this study, while 14.9% of the parents of children and adolescents with intellectual disabilities reported that they did not get their children vaccinated, 85.1% got their children vaccinated. Children and adolescents with intellectual disabilities have higher health risks due to various reasons such as the inadequacy of health protection and improvement programs, and therefore, they should be among the priority groups in immunization.

**Keywords:** Intellectual disability, vaccination, attitudes toward vaccination

## Introduction

Vaccines contain attenuated viruses or bacteria, or antigenic parts thereof, which trigger an immune response in the body. This attenuated agent allows the body to react first to the true pathogen without causing disease. Thanks to immunization, it is aimed to reduce the damage rate of diseases with high morbidity and mortality, especially infectious diseases. Vaccine provides individual immunization, and as the number of vaccinated individuals in the community increases, the contact of unvaccinated people with the disease agent decreases. Therefore, vaccination programs are the best method for preventing and eliminating communicable diseases and reducing the morbidity and mortality of diseases (1).

In every society, there are those who believe in the benefits of vaccines, those who do not, and those who think that they are harmful. In addition to those who are vaccinated, there are also those who are indecisive about vaccination or refuse to be vaccinated. Since the discovery of vaccines until today, anti-vaccination approaches in the world have increased, and there has been a decrease in vaccination rates and an increase in the frequency of vaccine-preventable diseases in recent years (2,3). It has been reported that the rate of vaccination in our country, which was 98% in 2016, decreased to 96% in 2017 (3). In the report of the World Health Organization (WHO), in which country-specific immunization profiles and estimates are presented, a decrease in immunization was observed in 2016-2017 (4). Worldwide, vaccination rates, which were 86% in 2019, dropped to 83% in 2020 (5). While the number of families rejecting vaccine in Türkiye was 183 in 2011, it was 980 in 2013, 5400 in 2015, 12.000 in 2016, and 23.000 in 2018 (3). According to the Demographic Health Survey of Türkiye (TNSA) 2018, the rate of 12-23-month-old babies having received all vaccines according to age was 67%, while the same rate was 60% in the sample of Syrian individuals living in Türkiye. While the immunization rates of hepatitis B were 96% at the 1<sup>st</sup> dose and 93% at the 1<sup>st</sup> dose of BCG and DaBT-Hib-IPA, it was seen in the TNSA 2018 results that a decrease was observed in vaccination rates in the following periods (6). Following the rapid increase in vaccine rejection cases in the world in recent years, the WHO included "anti-vaccination" among the 10 global health problems that it plans to solve in 2019 (5).

lerdir. Sonuçlara göre zihinsel yetersizliği olan çocuk ve adölesanlarda aşılamaya engel olan durumların dikkatle irdelenmesi aşılama oranlarının artırılması için elzemdir. Zihinsel yetersizliği olan çocuk ve adölesanlar, sağlığı koruma ve geliştirme programlarından yeterince yararlanmalarını yanında yetersizlikten kaynaklanan çeşitli nedenlerle sağlık riskleri daha fazla olduğundan bağışıklamada öncelikli gruplar arasında yer almalıdırlar.

**Anahtar Kelimeler:** Zihinsel yetersizlik, aşı, aşı tutumu

Studies show that individuals with disabilities participate less in routine immunization programs than individuals without disabilities (7). Emerson et al. have found that the rates of complete immunization in all age groups in England were lower in children with intellectual disability than in children without intellectual disability, and that immunization was significantly low, especially in comparisons made at the age of nine months and three years (8). Autism is among the reasons for rejection of vaccines (9). Although there are studies examining specific vaccines in children with intellectual disability, no study has been found examining all childhood vaccines (10,11). It has been determined that the rate of hepatitis B immunization in children and adolescents with intellectual disability is 73.4% in Taiwan, and it has been determined that the income level of the family and the age of the child affect the immunization rate (12). It has been determined that the risk of death in children aged 1-5 years with intellectual disability is six times higher, and respiratory tract infections (35.6%), aspiration (8.2%), and other infections (6.9%) are among the causes of death (13). It has been reported that children with neurodevelopmental problems have a high risk of influenza, whereas only 50% of children with neurodevelopmental problems are vaccinated by their families (14). Although there are various studies on vaccine rejection, vaccine hesitancy, and attitudes towards vaccines, which have been on the agenda all over the world recently, studies examining the attitudes and behaviors of the parents of children with intellectual disability are limited (7,8,15). This study was carried out to determine the attitudes of parents of the children and adolescents aged 0-18 years with intellectual disability towards vaccination before the COVID-19 pandemic.

## Materials and Methods

This descriptive study was conducted with the parents of 94 children and adolescents aged 0-18 years who were educated in a special education center in İzmir. Parents of the children and adolescents with intellectual disability between the ages of 0-18 years who agreed to participate in the study were included in the study, but parents who could not communicate in Turkish were not included. In the study, it was planned to include all parents who met the inclusion criteria with the full sample method, but the study was terminated due to the

onset of the COVID-19 pandemic. An announcement was made to the parents through the school administration, and data were collected from the parents who agreed to participate in the research and could be reached by face-to-face interview method.

**Data Collection Tools:** Socio-demographic Questionnaire and Attitudes towards Vaccination Scale were used as data collection tools in the study.

**Socio-demographic Questionnaire:** In the first part of the questionnaire prepared for the study, socio-demographic characteristics of the individuals such as sex, age, marital status, educational status, employment status, and health status were included. The form also included questions about the parents' views on vaccination (2).

**Attitudes Towards Vaccination Scale (ATVS):** It is a 14-item scale developed by Cvjetkovic et al. in 2017 and adapted into Turkish by Özümit and Yıldırım Sarı (2,16). The items of the scale cover the attitudes, behaviors and thoughts of the people about vaccination applications in general. The Attitudes Towards Vaccination Scale is a 5-point Likert type scale (1= Strongly disagree, 5= Strongly agree). As a result of the factor analysis, a three-factor structure was found explaining 66% of the item variance (eigen values 46.11, 12.22 and 7.85). Items with negative expressions in scoring are reverse scored. In total scoring, scores between 14-32 are considered negative attitudes, scores between 33-51 are considered medium and scores between 52-70 are considered positive attitudes. The Cronbach's alpha value of the original scale was 0.90 with high internal consistency, and it was found to be 0.75 in this study (2).

**Data Analysis:** Data were analyzed using SPSS 25.0 (Statistical Package for Social Sciences) statistical program. Since descriptive statistics and quantitative data did not show normal distribution (Kolmogorov Smirnov  $p < 0.05$ ), non-parametric tests were used, and  $p < 0.05$  was considered significant in a 95% confidence interval.

**Research Ethics:** Ethics approval was obtained from the İzmir Katip Çelebi University Non-Invasive Clinical Research Ethics Committee (Date: 28/02/2020, Number: 2020-GO-KAE-0003), and institutional approval was obtained from the institution administration. Written consent was obtained from the parents participating in the study, and they were informed that their information would be kept confidential and would not be shared with persons/institutions/organizations.

## Results

Among the parents participating in the study, mean age of the mothers was  $39.2 \pm 8.5$  (min-max= 20-62) years and that of the fathers was  $43.6 \pm 8.7$  (min-max= 22-67) years. The educa-

tion level of the mothers was mostly high school (31.9%) and that of the fathers was university (33%). Of the families, 42.6% had two children, and the income of 46.8% was equal to their expenses. Mean age of the children was  $8.1 \pm 4.0$  (2-18) years, with 59.6% males (Table 1).

As seen in Table 2 and Table 3, 73.4% of the parents stated that they believed that vaccines had serious side effects. Among these side effects, fever (64.9%), nausea (48.9%), headache (45.7%) and vomiting (43.6%) were the most common. Of the families, 14.9% had never been vaccinated and they thought that the vaccines were not effective. Of the families, 85.1% (n= 80) stated that they had their children vaccinated. The most common vaccines given to children were the varicella (96.2%), measles rubella mumps (96.2%) and DaBT-IPA-Hib (70.0%). Of the families, 3.8% had one vaccine, 36.3% had two, 27.5% had three, 6.3% had six and 35% had eight. Of the families who did not have the vaccine, 57.1% stated that they heard negative comments about the vaccines, 28.6% stated that they were commercial, 28.6% thought they were religiously objectionable, and 35.7% had negative thoughts about the contents of the vaccines. Of the families, 11.7% had paid vaccines, and all of them were flu vaccines (Table 3). Families who did not receive paid vaccinations (88.3%) stated that they did not have paid vaccinations because they did not have information (50.6%), could not afford the cost (36.2%) and found it unnecessary (13.2%) (Table 3).

The parents' total ATVS median score was 43 (29-62), and they had a moderately positive attitude. Median of the attitude subscale score was 25 (13-30), and median of the thought subscale score was 17 (12-36). Although median ATVS scores according to the education levels of the mothers and fathers indicated a moderately positive attitude, no difference was determined according to the education level ( $p > 0.05$ ). According to the opinion that "vaccines have serious side effects", when the ATVS scores were compared, it was determined that there was a difference between the groups ( $p < 0.005$ ), and in further analysis, the difference was due to those who believed that they had serious side effects. Accordingly, those who believed that they had serious side effects had the lowest median ATVS score ( $p < 0.005$ ). Parents' ATVS scores were compared according to their sources of information ( $p < 0.005$ ), and it was determined that median ATVS scores of those who received information from health personnel were higher than those who received information from other sources ( $p < 0.005$ ) (Table 4).

## Discussion

In this study, which was conducted to determine the attitudes of the parents of children and adolescents with intellectual disability towards immunization, 27.7% of the parents

**Table 1.** Socio-demographic characteristics of the parents and children/adolescents

Characteristics		n (%)
<b>Gender</b>	Girl	38 (40.4)
	Boy	56 (59.6)
<b>Mother's educational status</b>	Literate	6 (6.4)
	Elementary school	19 (20.2)
	Secondary school	26 (27.7)
	High school	30 (31.9)
	University	13 (13.8)
<b>Father's educational status</b>	Literate	4 (4.3)
	Elementary school	13 (13.8)
	Secondary school	20 (21.2)
	High school	26 (27.7)
	University	31 (33.0)
<b>Number of children</b>	1	24 (25.5)
	2	40 (42.6)
	3	17 (18.1)
	4 and more	13 (13.8)
<b>Income level</b>	Income< expenses	41 (43.6)
	Income= expenses	44 (46.8)
	Income> expenses	9 (9.6)
<b>Place of living</b>	County	33 (35.1)
	City	34 (36.2)
	Metropolitan	27 (28.7)
<b>Source of information*</b>	Healthcare personnel and other sources	40 (42.6)
	Healthcare personnel	26 (27.7)
	Other sources	28 (29.7)

\*More than one answer was given.

received information about vaccination from healthcare personnel while 29.7% used television, radio, relatives/neighbors and the internet as information sources as in other studies (17-20). According to the findings, it can be said that parents who receive information from health personnel have more positive attitudes towards vaccination. Parents who get information from other sources have more negative attitudes. The place of mass media today is undeniable, but besides the benefits of mass media, its harms are also mentioned. It is known that negative news from the media has an effect on individuals to become anti-vaccinist (17,18,20,21). In a study, it has been determined that individuals receive news on vaccine mostly from television (49.3%) and the internet (44.2%), which are followed by doctors (21). Today, social media is where anti-vaccination is based and spread rapidly. According to the results of the research, the importance of carrying out initiatives where the Ministry of Health and health personnel will be the first source of information for the dissemination of information about vaccines emerges once again.

In the literature, it has been reported that the reasons for individuals to be against vaccines include not thinking that vaccines are safe, thinking that they have side effects, thinking that they contain harmful substances, thinking that they cause infertility, and thinking that the vaccine is not beneficial (17-20,22-24). As in other studies, more than half of the parents in this study thought that vaccines had serious side effects (20,23,25). While fever came first among these side effects, the rate of those thinking that autism was a vaccine side effect was found as 14.9%. The rate of not vaccinating and delaying vaccination in the families of children with autism has been found to be high (26). In anti-vaccine discourses, it is stated that the mercury contained in the vaccine causes autism. Although the scientific truth of this explanation has not been proven, it is stated that mercury is at a low level in the vaccine content in the world and in Türkiye (3). In this study, the attitudes of parents with a view that "vaccines have serious side effects" were also more negative about getting vaccinated. These results show the importance of initiatives such as

**Table 2.** Parents' opinions on the serious side effects of vaccines

Parents' opinions		n (%)
"Vaccines have serious side effects"	I have no idea	13 (13.8)
	No	12 (12.8)
	Yes	69 (73.4)
Fever	No	33 (35.1)
	Yes	61 (64.9)
Headache	No	51 (54.3)
	Yes	43 (45.7)
Nausea	No	48 (51.1)
	Yes	46 (48.9)
Vomiting	No	53 (56.4)
	Yes	41 (43.6)
Sensitivity at the vaccination site	No	68 (72.3)
	Yes	26 (27.7)
Discomfort	No	83 (88.3)
	Yes	11 (11.7)
Causing autism	No	80 (85.1)
	Yes	14 (14.9)
Causing multiple sclerosis	No	92 (97.9)
	Yes	2 (2.1)
Loss of consciousness	No	90 (95.7)
	Yes	4 (4.3)
Loss of vision	No	93 (98.9)
	Yes	1 (1.1)

correct communication, reducing information pollution with effective public service announcements, and giving more role to health professionals in order to obtain information from the right source to gain a positive attitude towards vaccination in individuals.

Beliefs about vaccination also affect parents' vaccination status of their children (17,25). Of the parents, 14.9% reported that they did not vaccinate their children with intellectual disability and 85.1% (n= 80) reported that they did. The rate of age-appropriate fully vaccinated children was found as 67% in TNSA 2018. In a systematic review conducted with 28 studies including individuals with intellectual disability, it has been reported that 64% of the individuals received at least one dose of vaccine (11). In this study, among the reasons for not getting vaccinated was not believing in the effectiveness of the vaccines. In this study, as in other studies, MMR and varicella vaccines were mostly administered (8,25,27). In the literature, there are studies reporting different results about the most commonly administered vaccine (11,24). This can be explained by the fact that the factors associated with vaccine acceptance have different effects on individuals and societies.

Considering the scores of the attitudes towards vaccination scale, it can be said that parental attitudes are at a moderate level in terms of the whole scale and its sub-dimensions. In the study of Özümit and Yıldırım Sarı, the scale total score value of 500 participants consisting of parents and health professionals is  $51.64 \pm 8.4$  (minimum= 19, largest= 70, median= 51) (2). In the study conducted by Cvjetkovic et al. with university students, including medical students, the total scale score of the participants has been found to be  $56.78 \pm 11.10$  (16). It can be said that the scale attitude score in this study was lower than in other studies, and the difference was due to the fact that the studies were conducted with different sample groups.

In the study, approximately one in ten parents had their child vaccinated for a fee. The fact that the parents reported that they did not have enough information about paid vaccination and that they did not get vaccinated because their financial situation was not good explains the low rate of this rate. In a study conducted in the UK, low vaccination rates in individuals with intellectual disability have been associated

**Table 3.** Parents' status of getting their children vaccinated

Characteristics		n (%)
<b>Status of getting vaccinated</b>	Those who did not	14 (14.9)
	Those who did	80 (85.1)
<b>Vaccines administered to the children until today</b>	Hepatitis A	1 (0.8)
	Hepatitis B	37 (46.3)
	Tuberculosis	37 (46.3)
	DaBT-IPA-Hib	56 (70.0)
	Conjugated <i>Pneumococcus</i>	34 (42.5)
	Oral Polio	38 (47.5)
	MMR	77 (96.2)
	Varicella	77 (96.2)
<b>Reason for not getting their children vaccinated (n= 14)*</b>	I do not think the vaccines are effective.	14 (100.0)
	I hear negative remarks about vaccines.	8 (57.1)
	I believe vaccines have a commercial purpose.	4 (28.6)
	I believe it is religiously objectionable to get vaccinated.	4 (28.6)
	I have negative views about the contents of the vaccines.	5 (35.7)
<b>Getting their children vaccinated with paid vaccines</b>	Those who did not	83 (88.3)
	Those who did	11 (11.7)
<b>Reason for not getting the paid vaccines</b>	Lack of information	42 (44.7)
	Lack of financial status	30 (31.9)
	Finding it unnecessary	11 (11.7)

\*More than one answer was selected.  
DaBT-IPA-Hib: Diphtheriae, tetanus, *Hemophilus influenza*, inactive polio, MMR: Measles, mumps, rubella.

**Table 4.** Distribution of the ATVS scores of the parents according to some of their characteristics and attitudes

Characteristics	Median (min-max)	p
<b>Mother's education level</b>		
Elementary and secondary school	43 (37-64)	**p= 0.05
High school and university	43 (29-62)	
<b>Father's education level</b>		
Elementary and secondary school	43 (37-54)	p= 0.05
High school and university	43 (29-64)	
<b>"Vaccines have serious side effects"</b>		
I have no idea	46 (30-55)	***KW= 15.87 p< 0.005
There are no side effects	48.5 (41-64)	
There are side effects	43 (29-58)	
<b>Source of Information</b>		
Healthcare personnel + other sources	43 (30-64)	KW= 17.200 p< 0.005
Only healthcare personnel	48 (38-62)	
Other sources*	42 (29-58)	

\*Other sources: Neighbors/relatives, mass media, social media.  
\*\*MWU: Mann-Whitney U test.  
\*\*\*KW: Kruskal-Wallis test.

with low income (28). In a study, it has been determined that as the income level increases, families have more non-routine vaccines such as the influenza vaccine (25). In another study, 46% of the children with intellectual disability in the sample have received influenza vaccination (14). It has been determined that 22.9% of the children aged 12-18 years with mental retardation received seasonal influenza vaccine (10). In this study, although the number of children in the family and the status of vaccination were not examined, Üzüm et al. have determined that as the number of children in the family increases, the possibility of knowing and getting non-routine vaccines decreases. In the future, studies examining the effects of different variables such as income and number of children on vaccination attitudes can be conducted. In this study, it was determined that the attitude towards vaccines did not change according to the level of parental education, and it has been previously reported that individuals with a secondary school and below education level have a more negative attitude towards vaccines (21).

This study was planned to compare the parents' attitudes towards vaccination of children and adolescents aged 0-18 years with and without intellectual disability. In the pre-pandemic period, data were collected from the parents of children with intellectual disability, but the data of parents of healthy children and adolescents planned as the control group could not be collected due to the pandemic. The data obtained in the study reflect the statements of the parents, vaccination reports were not examined, and the number of doses of the vaccines could not be determined.

To conclude, 14.9% of the parents in this study reported that they did not get their children with intellectual disability vaccinated, and 85.1% (n= 80) reported that they did. According to the results of the research, it is essential to carefully examine the situations that prevent vaccination in children and adolescents with intellectual disabilities in order to increase vaccination rates. Children and adolescents with intellectual disability should be among the priority groups in immunization since they do not benefit from health protection and development programs adequately, as well as their health risks are higher due to various reasons arising from the disability.

**Ethics Committee Approval:** Ethics Committee approval was received from İzmir Katip Çelebi University Non-Invasive Clinical Research Ethics Committee (Decision no: 592, Date: 13.02.2020).

**Informed Consent:** Patient consent was obtained.

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