

# ORIGINAL ARTICLE

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## Parental Vaccine Hesitancy; Which Childhood Vaccines Were Refused and Why?

### Ailelerin Aşı Tereddütü; Hangi Çocukluk Aşılarını Reddetti ve Neden?

#### ABSTRACT

##### Objective:

One of the main purposes of immunization services is to protect vaccinated children from vaccine-preventable disease, and the other is to ensure that disease factors can be brought under control in the society by reaching a certain immunization rate. This study aims to investigate which childhood vaccines were refused in the calendar and the reason for these refusals.

##### Material and Methods:

The files comprising the refusal to consent to child vaccination forms submitted to Antalya Provincial Directorate of Health in 2019 were reviewed to reveal which vaccines had been refused by parents besides the reasons for vaccination refusals.

##### Results:

In total, 286 parents made 977 vaccination refusals, with 80 of the parents refusing only one vaccine, and notably 77.5% of them (n=62) refused only the Hepatitis A vaccine. Moreover, 40.2% of the parents who refused to consent to their child's vaccination stated that they refused the vaccination since they did not consider the vaccine necessary, along with 37.1% who did not trust the vaccines, 13.2% who were afraid of the adverse effects of vaccination, and 9.5% who had religious reasons.

##### Conclusion:

The increasing safety concerns of parents about vaccines should be addressed in order to inform parents about the contents, effects, adverse effects and requirements of vaccines so as to eliminate the false beliefs for the sake of protecting public health in general. This study is believed to act as a roadmap to prevent vaccination refusals, which are a major public health problem and are expected to increase.

##### Key Words:

Childhood, Immunization, Vaccination, Vaccine refusal

## ÖZ

### Amaç:

Aşılama hizmetlerinin temel amaçlarından biri aşılanan çocukları aşı ile önlenebilir hastalıklardan korumak, diğeri ise toplumda belli bağışıklama oranına ulaşarak bu hastalık etkenlerinin kontrol altına alınmasını sağlamaktır. Bu çalışma, takvimdeki hangi çocukluk çağı aşılarının reddedildiğini ve nedenlerini araştırmayı amaçlamaktadır.

### Gereç ve Yöntemler:

Bu çalışmada 2019 yılında Antalya İl Sağlık Müdürlüğüne başvuran çocukluk çağı aşı reddi dosyaları taranmış ve aileler tarafından hangi aşıların reddedildiği ve aşı reddi nedenleri incelenmiştir.

### Bulgular:

Toplamda 286 aile 977 aşığı reddetmiş, 80 aile sadece tek aşı reddi yapmış ve bunların %77,5'i (n=62) sadece Hepatit A aşısını reddetmiştir. Ayrıca, çocuğuna aşı yaptırmayı reddeden ebeveynlerin %40,2'si aşığı gerekli görmediklerini, %37,1'i aşıya güvenmediklerini, %13,2'si aşı yan etkilerinden korktuklarını ve %9,5'i dini nedenlerden aşığı reddettiklerini belirtmiştir.

### Sonuç:

Aşıların; içerikleri, etkileri, yan etkileri ve gereklilikleri konusunda ailelerin bilgilendirilmesi ve genel olarak toplum sağlığının korunması adına yanlış inanışların ortadan kaldırılması için ailelerin aşılarla ilgili artan güvenlik endişelerinin giderilmesi gerekmektedir. Bu çalışmanın önemli bir halk sağlığı sorunu olan ve artması beklenen aşı reddi vakalarının önüne geçilmesi için yol haritası olacağı düşünülmektedir.

### Anahtar Kelimeler:

Çocukluk, Bağışıklama, Aşılama, Aşı reddi

## INTRODUCTION

Vaccines determined for the childhood vaccination calendar are administered to protect children from diseases and complications. With the childhood vaccination programmes, polio in 2002 and neonatal tetanus in 2009 were both eliminated in Turkey (1). It is a fact that, for many diseases, the success of immunization largely depends on public acceptance of the vaccination (2). Public acceptance is fundamental to vaccination since diseases are highly likely to be less common once herd immunity is achieved with safe and effective vaccines, also leading to protecting vulnerable individuals who cannot be vaccinated (3). However, vaccine hesitancy has been a source of considerable concern for the whole world (4).

Vaccine hesitancy is defined as “delay in acceptance or refusal of vaccines despite availability of vaccine services”(5). Although this definition is widely accepted, it has also been noted that inconsistencies and uncertainty in the measurement and definition of vaccine hesitancy can lead to misunderstandings in particular. It has, therefore,

been argued that vaccine hesitancy is complex and context-specific, varying across time, place, and available vaccines. It is also influenced by factors such as complacency, convenience, and confidence (6–8). The vaccine hesitancy concept will still not capture all who do not accept vaccines, since some parents may be decisive outright ‘refusers’ of vaccines. It has been stated that people who are certain to refuse to be vaccinated at the decision-making stage cannot be considered hesitant about vaccination (7). Regarding the specific knowledge about types of disease, it is known that while the incidence of measles was 0.01 per 100,000 people in 2016, it increased to 3.49 per 100,000 people according to 2019 world data (9). In the event that the cases of vaccine refusal increase, so will the likelihood of an outbreak. In 2019, the World Health Organization (WHO) listed vaccine hesitancy as one of the top 10 global health threats, due to the rapid increase in cases of vaccine hesitancy all around the world (10). In order to overcome vaccine hesitancy, it is important to consider the variety of reasons why people have missed vaccination or are totally unvaccinated (11). Vaccine hesitancy may be specific to one or some particular vaccines, but not to all; therefore, findings should not be generalized to all vaccines unless stated in the responses at the time of interpretation of questionnaires (12).

Data from the Institute of Health reported that unvaccinated children were 23 times more likely to have pertussis, 9 times more likely to contract varicella, and 6.5 times more likely to be hospitalized for pneumococcal disease (13). Research has shown that a large part of the population, in particular, believes in the effectiveness of vaccines on the whole, though they have some concerns about the safety and efficacy of certain vaccines (14, 15). Still, larger studies are needed to pool data from various countries and examine intra- and inter-country differences in vaccine hesitations as well as global trends. This study aimed to investigate which vaccines in the vaccination calendar most parents in Türkiye refused for their children along with their reasons. In Türkiye and in the world, surveys have always been conducted regarding vaccination refusal or vaccine hesitation, and the present study is of great importance in that it can show real-life data within the country.

## MATERIAL and METHODS

Provincial Directorates of Health in Türkiye are responsible for vaccinating the children registered to them in each province according to the immunization schedule and notify the Ministry of Health about the number and rate of vaccination in quarterly periods. With the vaccination calendar, the Ministry of Health made a planning to show when and which vaccines should be given to children. While some vaccines are sufficient to be administered once, booster doses of some vaccines are also needed. However, the protective efficacy of vaccines can be achieved when these vaccines are administered in appropriate numbers and intervals. The 2019 Vaccination Calendar (Public Health) of the Turkish Ministry of Health is presented in Table I (16).

**Table I.** Ministry of Health, Childhood Immunization Schedule, 2019 (16).

	Vaccines (V)
At birth	1 <sup>st</sup> dose of Hepatitis B
End of 1st month:	2 <sup>nd</sup> dose of Hepatitis B
End of 2nd month	1 <sup>st</sup> doses of BCG (TB) and DTaP-IPV-Hib 1 <sup>st</sup> dose of PCV
End of 4th month	2 <sup>nd</sup> dose of DTaP-IPV-Hib, 2 <sup>nd</sup> dose of PCV
End of 6th month	3 <sup>rd</sup> dose of Hepatitis B 3 <sup>rd</sup> dose of DTaP-IPV-Hib 1 <sup>st</sup> dose of OPA
End of 12th month	Booster dose of PCV 1 <sup>st</sup> dose of MMR 1 <sup>st</sup> dose of Varicella
End of 18th month	Booster dose of DTaP-IPV-Hib 2 <sup>nd</sup> dose of OPA 1 <sup>st</sup> dose of Hepatitis A

BCG (TB) DTaP-IPV-Hib (Diphtheria, Pertussis, Tetanus, Inactive Polio, Haemophilus influenzae type b (5-in-1)), PCV (Pneumococcal Conjugate Vaccine) OPA (Oral Polio), MMR (Measles, Rubella, Mumps), and Varicella(VZV)

Children who are registered in the Family Medicine Information System must be vaccinated at intervals determined according to the immunization schedule. If a parent does not consent to vaccination determined in the vaccination calendar provided by their Family physician, a form declaring this refusal is to be filled. The parent signs the form together with the authorized family physician, stating that the necessary information has been provided about the diseases, risks, and dangers that may occur if their child is not vaccinated, and that they do not allow their child to be vaccinated of their own free will. The relevant form is approved by the responsible physician at the Community Health Services. In cases when family physicians fail to vaccinate children registered with them in accordance with the immunization schedule, they are subject to salary deduction. In such a case, for the refund of the deduction, family physicians can apply to the Directorate with a petition of objection and the vaccination refusal consent form

received from the parent. This study reviewed the petitions of objections made to the Antalya Provincial Directorate of Health in the first 9 months of 2019 as well as the petitions of parents who refused childhood vaccines. Identification numbers of each parent who refused vaccination were used as a code, after which the number of times that parents refused vaccination for their children, which vaccines they refused, and the reasons for their vaccine refusal were examined. Real-life data were analyzed retrospectively. The necessary approval was obtained from the Antalya Health Sciences University, Training and Research Hospital Clinical Research Ethics Committee ( Date: 16.05.2019,No:13/2).

### Statistical Analysis

The data were analyzed by using IBM SPSS-20 (IBM Corp, Armonk) program and assessed with descriptive statistics (number, percentage, frequency). Pearson chi-square test was used to compare groups in census data.

### RESULTS

In the first 9 months of 2019, there were a total of 977 vaccine refusals in Antalya. As can be seen in Table II, the most refused vaccines were: Diphtheria, Pertussis, Tetanus, Inactive Polio, Haemophilus influenzae type b (DTaP-IPV-Hib) 226 (23.1%), pneumococcal conjugate vaccine (PCV) 211 (21.6%), and Hepatitis A 137 (14%). In addition, of all the parents who did not allow their children to be vaccinated in accordance with the immunization schedule, 40.2% of them stated that they did not consider the vaccines necessary, 37.1% did not trust the vaccines, 13.2% were afraid of the adverse effects of the vaccines, and 9.5% refused the vaccine due to religious reasons (Table II).

**Table II.** Distribution of vaccines refused in the childhood immunization schedule and the common causes

	Not considering vaccination necessary n (%)	Not trusting vaccines n (%)	Fear of adverse effects n (%)	Religious reasons n(%)	Total n(%)
DaBT-IPA-Hib n(%)	88 (38.9%)	85 (37.6%)	29 (12.8%)	24 (10.6%)	226 (23.1%)
PCV n(%)	80 (37.9%)	81 (38.3%)	28 (13.2%)	22 (10.4%)	211 (21.6%)
OPA n(%)	55 (42.3%)	44 (33.8%)	19 (14.6%)	12 (9.2%)	130 (13.3%)
MMR n(%)	24 (40.6%)	18 (30.5%)	11 (18.6%)	6 (10.1%)	59 (6%)
BCG n(%)	19 (42.2%)	21 (46.6%)	1 (2.2%)	4 (8.8%)	45 (4.6%)
Hepatitis B n(%)	42 (38.5%)	45 (41.2%)	14 (12.8%)	8 (7.3%)	109 (11.1%)
Hepatitis A n(%)	61 (44.5%)	49 (35.7%)	16 (11.6%)	11 (8%)	137 (14%)
Varicella n(%)	24 (40%)	19(31.6%)	11 (18.3%)	6 (10%)	60 (6.1%)
Total n(%)	393 (40,2%)	362 (37,1%)	129(13,2%)	93 (9,5%)	977

The distribution of the reasons for vaccine refusal is presented in Table II in detail. Of those who did not consider the vaccine necessary as the reason for refusal, 88 (22.3%) refused the DTaP-IPV-Hib (5-in-1) vaccine, 80 (20.4%) the pneumococcal conjugate vaccine (PCV), and

61 (15.5%) the Hepatitis A vaccine. Moreover, 85 (23.5%) parents stated their distrust for the 5-in-1 vaccine, 81 (22.4%) parents for the PCV, and 49 (13.5%) for the Hepatitis A vaccine (Table III).

**Table III.** Grouping by the number of parental vaccine refusals and investigating which vaccines they refused

	1V n(%)	2V n(%)	3 V n(%)	4V n(%)	5V n(%)	6 V n(%)	7 V n(%)	8 V n(%)	9 V n(%)	10 Vn(%)
VSV	0	3(8.8%)	34(12.7%)	4(3%)	0	9(5.8%)	7(9.1%)	1(6.3%)	2(2.2%)	0
BCG	2(2.5%)	3(8.8%)	9(3.4%)	3(2.8%)	6(10.9%)	5(3.2%)	3(3.9%)	0	7(7.8%)	7(10%)
MMR	1(1.25%)	2(5.9%)	34(12.7%)	4(3%)	0(%)	8(5.1%)	7(9.1%)	1(6.3%)	2(2.2%)	0
Hepatitis B	8(10%)	5(14.7)	9(3.4%)	20(15.2%)	12(22%)	15(9.6%)	13(16.9%)	2(12.5%)	9(10%)	16(22.9%)
OPA	3(3.8%)	1(2.9%)	43(16.1%)	26(19.7%)	5(9.1%)	22(14.1%)	9(11.7%)	2(12.5%)	12(13.3%)	7(10%)
DaBT-IPA-Hib	1(1.3%)	10(29.4%)	53(19.8%)	31(23.5%)	17(30.9%)	44(28.2%)	16(20.8%)	4(25%)	29(32.2%)	21(30%)
KPA	3(3.8%)	8(23.5%)	48(18%)	25(18.9%)	12(21.8%)	43(27.5%)	22(28.6%)	6(37.5%)	25(27.8%)	19(27.1%)
Hepatitis A	62(77.5%)	2(5.9%)	37(13.9%)	19(14.4%)	3(5.5%)	10(6.4%)	0	0	4(4.4%)	0
Total(n:977)	80(8.2%)	34(3.5%)	267(27.3%)	132(13.5%)	55(5.6%)	156 (16%)	77 (7.9%)	16(1.6%)	90(9.2%)	70(7.1%)

Regarding the reasons for parental refusal of a single vaccine, 34 (42.5%) parents stated that they did not consider the vaccines necessary and 30 (37.5%) stated that they did not trust the vaccines. When the reasons for parental refusal of 7 parents for 10 different vaccine refusals were examined, 45.7% appeared to have resulted from the fact that they did not consider the vaccines necessary, while

37.1% were due to the fact that they did not trust the vaccines (Table IV). While one parent who refused 8 vaccines stated that they did not consider vaccines necessary as the main reason for all their vaccine refusals, another parent stated that they refused 7 (43.7%) vaccines due to religious reasons (Table IV).

**Table IV.** Reasons for parental vaccine refusal grouped according to the number of vaccine refusals

	Not considering vaccination necessary n (%)	Not trusting vaccines n (%)	Fear of adverse effects n (%)	Religious reasons n(%)	Total V	Total parents (n:286)
1 Vn (%)	34 (42.5%)	30 (37.5%)	10 (1.3%)	6 (7.5%)	80	80 (28%)
2 V n(%)	15 (44.1%)	9 (26.5%)	8 (23.5%)	2 (5.9%)	34	17 (5.9%)
3 Vn(%)	85 (31.8%)	98 (36.7%)	51 (19.1%)	33 (12.4%)	267	89 (31.1%)
4 Vn(%)	62 (47%)	49 (37.1%)	16 (12.1%)	5 (3.8%)	132	33(11.5%)
5 V n(%)	18 (32.7%)	30 (54.5%)	0	7 (12.7%)	55	11 (3.8%)
6 Vn(%)	67 (42.9%)	61 (39.1%)	13 (8.3%)	15 (9.6%)	156	26 (9.1%)
7 V n(%)	34 (44.2%)	29 (37.7%)	12 (15.6%)	2 (2.6%)	77	11(3.8%)
8 Vn(%)	8 (50%)	1 (6.3%)	0	7 (43.7%)	16	2 (0.7%)
9Vn(%)	38(42.2%)	29 (32.2%)	11 (12.2%)	12 (13.3%)	90	10 (3.5%)
10Vn(%)	32(45.7%)	26 (37.1%)	8 (11.4%)	4 (5.7%)	70	7 (2.5%)

## DISCUSSION

It is of great importance to routinely monitor the frequency of vaccine refusal and identify parental concerns about vaccines. This study determined which vaccines were refused by parents taking into consideration their reasons and the districts they were registered in. Understanding the grounds for the vaccine refusal plays a critical role in developing strategies for identified problems. Although the debate on vaccine hesitancy has been renewed in recent years due to varying epidemics of vaccine-preventable diseases even in populations with easy access to vaccines it has long been recognized as a potential problem (17). Mandatory vaccination for childhood has become an important health policy to increase immunization, especially in countries with low vaccination rates (2).

The main concern with vaccine hesitancy and inadequate herd immunity is the fact that unvaccinated individuals are

likely to act like a reservoir of the virus, thereby resulting in the spread of the virus to the entire population which cannot be controlled, and leading to further outbreaks (18). For example, there has been a 30% increase in measles cases worldwide, the reasons of which are quite complex and not solely due to vaccine hesitancy, and it has also been noted that the disease is resurgent in some countries that are close to elimination (10). In this study, 59 parents were reported to have refused the MMR vaccine, and 40.6% of them did not consider the vaccine necessary and 30.5% did not trust the vaccine (Table II). Moreover, 58.8% of the parents who refused the vaccine reported that they thought that the vaccines would not protect their children against communicable diseases (19). However, the European Centre for Disease Prevention and Control (ECDC) found that the number of measles cases in Europe nearly tripled in 2017, with 87% of diagnosed cases being unvaccinated in-



dividuals. In that measles epidemic in Europe, 57 patients were reported to have lost their lives due to measles (20). In a study conducted with 51 parents who refused vaccination in Turkey, it was stated that 80.3% of the parents had their children vaccinated at least once before, whereas 19.7% of them had never had their children vaccinated since their birth (21). A total of 286 parents were revealed to have made 977 vaccine refusals, among which it was found that 80 parents refused only one vaccine, and noticeably ( $n=62$ ), 77.5% of them refused only the Hepatitis A vaccine, and none of the parents refused the chickenpox vaccine (Table III). In this connection, the administration of the Hepatitis A vaccine at the end of the 12th month shows that the children of those parents had received the other vaccines.

When the parents who refused the vaccine were asked about their reasons, half of the respondents further stated that they did not think that vaccines were necessary and effective, and the 37.7% of them indicated that they had bad experiences with vaccines (21). In another study, 74.7% of the parents who refused the vaccine emphasized their concerns about the adverse effects of the vaccines, and 61.4% mentioned about the negative information they had received about the vaccines (22). In this study, similarly, when the reasons for vaccine refusal were examined, either for parents who refused a single vaccine or for parents who refused vaccination for 10 times, it appeared that about half of them indicated their lack of trust in the vaccines themselves and were concerned about their adverse effects.

Another study conducted as a survey with 34 parents who refused vaccination reported that 75.8% of the parents referred to their concerns about the adverse effects of vaccines, 68.8% to their distrust of the pharmaceutical companies, and 54.5% to their distrust of the state's vaccine policies as the reason for vaccine refusal (19). In this study, however, there was no distrust either of pharmaceutical companies or of the state's vaccination policy among the reasons for parent refusal. The responding parents stated that they did not trust the vaccines and were worried about their adverse effects. However, it was believed that classifying the reasons for vaccine refusal in the relevant vaccination permit and asking parents to choose one/several of such reasons would both enable parents to express their opinions more comfortably and reveal the real reasons for refusal when they encountered certain reasons that they did not think of at that time, and thus, parents who refused vaccines could be better understood in terms of their way of thinking.

The use of vaccination-related questionnaires as a tool primarily aims to better understand parents' concerns and thus better respond to issues that concern them (6). Another survey conducted to characterize the current prevalence of vaccine refusal and specific vaccine safety concerns among parents reported that most parents believed that vaccines could protect their children from diseases. However, more than half of the parents expressed their concerns about serious adverse effects, and 11.5% reported that they refused at least 1 vaccine in the programme (23).

Furthermore, 28% of the parents who refused vaccination in 2019 did so for only one vaccine, while 31.1% refused 3 vaccines and 2.5% (7 parents) refused 10 vaccines. Considering that the study in question presented a certain time data, it is presumed that even if vaccine refusal starts with 1 vaccine, it is highly likely to increase if no corrective action is taken, allowing the refusal of all vaccines. However, the parents who refused all 10 vaccines turned out not to have refused MMR, chickenpox and Hepatitis A, in particular (Table III). Still, this does not mean that parents have had their children vaccinated fully because the study covered a certain period of time and the due dates of such vaccines may not have come in the vaccination programme. For that reason, the study interval remained narrow for determining the likelihood of parents refusing all childhood vaccines. However, since the first 9 months of 2019 were examined in this study, it did not reveal whether or not the parents who already refused a vaccine would refuse other vaccines in the vaccination schedule. It seems that vaccine refusals are likely to increase exponentially unless relevant studies are carried out concerning such parents and their motives. A large number of parents reported using alternative vaccination programmes other than the childhood vaccination programme, and only 17% of these parents refused all vaccinations. In addition, 13% of them reported that they had only refused certain vaccines (53%) and/or postponed some vaccines until their child grew up (55%) (13). The confirmed vaccination data revealed that 63% of the children in the participating families had been vaccinated in accordance with the vaccination schedule. While the vaccination rate was 94.7% for the DTaP-IPV-Hib vaccine, it remained at 57.5% for the second dose of Hepatitis A vaccine, so the refusal of the vaccine changed depending on the vaccine. The reasons for failing to administer certain vaccines according to the recommended programme as well as for vaccine refusals could not be specified (24).

SAGE developed a 10-item scale of vaccine hesitancy to assess this particular issue and perceptions of vaccines to implement it in various countries. However, it also appeared that parents had concerns that new vaccines might carry more risks than previously administered vaccines (15). An analysis of 86 published studies on vaccination suggested that the prevalence of vaccine hesitancy was systematically overestimated (25). It was concluded that the majority of parents were rather hesitant about new vaccines, but that it was more likely that new vaccines would help parents protect their children against the severity and/or lethality of any disease that may develop in case of not being vaccinated (26). For example, the least rate of vaccine refusal was for the BCG vaccine, which is an old vaccine developed against the known severity of tuberculosis bacillus. Of all the vaccine refusals, the rate of refusal of BCG vaccine was only 4.6%, while that of 5-in-1 was 23.1% and that of the PCV was 21.6%. With the introduction of new vaccines, such as pneumococcal conjugate vaccines and meningococcal vaccines, in national immunization programmes in many countries, additional vaccines

have required either additional vaccination visits or administering such additional ones in combination with other routine vaccines. Depending on the country, the parental anxiety grows as the number of injections increases with the addition of new vaccines (26). Hepatitis A vaccine and chickenpox vaccine were added to the vaccine calendar after other vaccines. In this study, 6.1% of vaccine refusals were related to the chickenpox vaccine. An average of 13.2% of all vaccine refusals were due to worrying about vaccine-based adverse effects, while the rate of those who refused the chickenpox vaccine in particular was 18.3%, being a higher than average rate of worry about adverse effects (Table II). Adverse effects that may develop after immunization, the relative risks of new vaccines perceived by parents, as well as certain unknowns reveal the absolute need for providing parents with necessary support during the introduction of new vaccines (15). It is also believed that parents should be informed about the fact that the benefits of vaccines outweigh their risks so that they will be convinced that vaccines are safer, especially if they are informed by their paediatricians (27, 28). Parents may find vaccines unnecessary because generations of parents have had little experience with these diseases (15).

Research has shown that parents are hesitant only about some vaccines, while accepting others (29). For example, parents may accept the safety and necessity of the flu vaccine, but refuse to have their child get the MMR vaccine because of parental concerns if they are misinformed about a relationship between preservative thiomersal and autism (30). Reasons for vaccine refusal demonstrated that 37.1% of parents did not trust vaccines and 13.2% were worried about vaccines' adverse effects. In Antalya, 18.6% of the parents who refused the MMR vaccine stated that they were worried about the adverse effects of the vaccine. Certain concerns of the parents include the content of the vaccines (i.e. aluminium, mercury) that they think may harm their children and the idea that vaccines may cause autism. Despite the presence of numerous relevant scientific studies, no relationship has been reported between vaccination and autism (24, 30).

Attitude-related factors such as one's cultural and religious beliefs, perception of risk or harm, and behaviour of self and others play a critical and interrelated role in parental decision making (2). Moreover, 9.5% of the parents who refused vaccination presented religious reasons. However, the vaccines provided and used by the Turkish Ministry of Health do not contain pork products and there is no reason to worry in relation to religion. Immunization stakeholders need to be expanded with the addition of psychologists, religious leaders, and community-based organisations (11). Regular follow-up and mapping of local immunization rates will help identify populations whose trust and acceptance of vaccines are declining, especially in relation to which vaccines are refused by parents within childhood immunization schedule, and classify the reasons for such refusal.

## CONCLUSION

This study is important in that it is the first study to examine the real-life data of vaccine refusals and to reveal which vaccines are refused by parents, as well as their causes in Antalya. It has been determined that parents who refused a single vaccine especially did so against the Hepatitis A vaccine. Generally, parents did not consider the vaccine as necessary and safe, which is the most common reason for vaccine refusal. By informing parents about the effects, contents and adverse effects of vaccines, parents are likely to be assured of their trust in vaccines.

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### Ethics Committee Approval:

This research complies with all the relevant national regulations, institutional policies and is in accordance with the tenets of the Helsinki Declaration, and has been approved by the Clinical Research at Antalya Training and Research Hospital, Health Sciences University Ethical committee (No:13/2 Date:16.05.2019)

### Informed Consent:

It is a retrospective study, patient consent was not obtained.

### Authors' contributions :

Concept-B.G., S.K.; Design- S.K.; Resources - S.K.; Materials - B.G., S.K.; Data Collection and/or Processing- B.G., S.K.; Analysis and/ or Interpretation - B.G.; Literature Search - B.G., S.K.; Writing Manuscript - B.G., Critical Review - B.G., S.K.

### Conflict of Interest Disclosures (includes financial disclosures):

The authors declare that there is no conflict of interest.

### Financial Disclosure:

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