

## Determination of Factors Affecting the Vaccination Status among the Children of Syrian Refugee Seasonal Farmworker Families in Turkey

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ARTICLE INFO	ABSTRACT
<p><b>Article Type:</b> Research Article</p> <p><b>Keywords:</b> Child Health, Refugee Health, Seasonal Farmworkers, Syrian Refugees, Vaccination</p> <p><b>Corresponding Author(s)</b> <sup>1</sup> Fikriye Yılmaz <sup>2</sup> Emre Özcan</p> <p><b>Adress:</b> <sup>1</sup> Baskent University, Bağlıca Campus, Ankara, Etimesgut, 06790, Turkey <sup>2</sup> Baskent University, Bağlıca Campus, Ankara, Etimesgut, 06790, Turkey</p> <p><b>E-mail:</b> <sup>1</sup> fyilmaz@baskent. edu.tr <sup>2</sup> eozcan@baskent. edu.tr</p>	<p><i>The aim of this study is to determine the factors affecting the completion status of childhood vaccination among the children of Syrian refugee seasonal farmworker families in Turkey. The sample of this cross-sectional study consisted of 543 Syrian parents in the province of Şanlıurfa, receiving assistance from the Social Cohesion Program and having children at the ages of 0-18. The data were collected by the researchers in face-to-face interviews with parents on April of 2022. It was determined that 67.6% of the children were fully vaccinated. According to the binary logistic regression model, factors affecting the completion status of childhood were determined as age of children, being a school-age child in the family who does not go to school and the amount of payment for utilities. Consequently, the interventions for accessibility of education and healthcare services for refugees and the social policies towards increasing their socioeconomic levels might be useful.</i></p>

## INTRODUCTION

Childhood vaccination is the main starting point for fighting vaccine-preventable diseases and reducing child mortality rates. The World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) emphasized that the rate of children who did not receive these vaccines in the last decade before the COVID-19 pandemic was in the range of 14-15%, and an average of 14 million babies remain unvaccinated each year, warning that these numbers continue to increase with the pandemic considering the 3-4-million increase in the number of unvaccinated children in 2020 (UNICEF, 2020). For example, according to the data of the first four months of 2020, the number of children receiving three doses of vaccines against diphtheria, tetanus, and pertussis (DTP3) decreased for the first time in the last 28 years (UNICEF, 2019).

One of the groups that are disadvantaged regarding the administration of childhood vaccines includes refugees. These groups have more difficulty in accessing vaccines in comparison to the local people due to problems such as the language barrier, unfavorable living conditions, and limited health literacy (Ekmekci, 2016; WHO, 2018). This situation is even more distressing for refugee seasonal farmworker families. The main factors that affect vaccination status in the children of these families include the income status of the family, their education level, living conditions, and access to healthcare facilities (Dogan & Pekaslı, 2021).

In Turkey, where a large mass migration wave has been faced following the humanitarian crisis in Syria that started in 2011, Syrian refugees have been given a "temporary protection status", and their basic rights and freedoms under international law have been designated and secured. For individuals in this status, Turkey has four different vaccination strategies in scope of "border crossing", "routine national vaccination", "additional vaccination in the case of epidemics", and "vaccine completion and boosting". During border crossings, OPV (up to 15 years of age), MMR (9 months - 15 years), DTaP-IPV-Hib (under 7 years), DTaP-IPV (7-12 years), diphtheria, and tetanus (women aged 15-49 years) vaccines are applied (Ozmert, 2020). All childhood vaccines given to the citizens of the Republic of Turkey within the scope of the routine national vaccination schedule are also given to Syrian children. In the scope of additional vaccination during an epidemic, OPV vaccines were prevalently administered between 2013 and 2015 (Onder, 2019). Finally, for vaccine completion and boosting, individuals who are not vaccinated at all or those who are not vaccinated completely are identified and vaccinated. The most comprehensive one among these campaigns involved the vaccination of 358,000 children at the ages of 0-59 months with MMR vaccines and 120,000 children with OPV, DTaP-IPV-Hib and Hepatitis B vaccines in 2017 (Ozmert, 2020).

Despite all vaccination efforts, there is still no up-to-date and reliable information about Syrians in Turkey who have received their childhood vaccines. It is not possible to access reliable data, especially about the seasonal farmworker families, who are among the groups that are hard to reach. At the latest, Turkey Population and Health Surveys reported in 2018 that 60% of Syrian children were administered all age-appropriate vaccines (TNSA, 2018a). In another study, it was stated that by 2018, children and adults received a total of 4,520,095 doses of compulsory vaccines other than OPV and MMR (TNSA, 2018b).

While seasonal farmworker families among Syrian refugees encounter several difficulties in their access to healthcare services due to various factors, it is highly critical to investigate how these factors affect the childhood vaccination status of children in this group. Because families are the ultimate decision-makers regarding the vaccination of their children, it is important to present findings about these families. In this study, it was aimed to investigate the factors that affect the childhood vaccination statuses among the children of Syrian refugee seasonal farmworker families in Turkey.

## 1. METHODS

### 1.1. Participants and data collection

This study was conducted with a cross-sectional field study design. The population of the study consisted of 1034 Syrian parents who were working as seasonal farmworkers in the province of Şanlıurfa, receiving assistance from the Social Cohesion Program organized with the collaboration of the General Directorate of Child Services of the Turkish Ministry of Family and Social Policies and UNICEF, and had children at the ages of 0-18. It was aimed to contact the entire population through the channels of the Governorship of Şanlıurfa, and the study was completed with 543 parents who could be found at their addresses and agreed to participate in the study (response rate: 52.5%).

The data were collected by the researchers in face-to-face interviews with parents that were carried out with the assistance of interpreters. Each interview took 15 minutes on average. The parents were required to show their vaccination cards in these interviews, and the dataset was formed this way. The data were collected between 1 and 28 April 2022.

This study was carried out in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Social Sciences, Humanities, and Arts Research Committee of Baskent University (decision date: 25 January 2022, decision number: 17162298.600-27). Informed consent was obtained from all participants.

### 1.2. Measures

A survey form consisting of two parts was administered to the parents. The first part of the survey consisted of questions about the sociodemographic characteristics of the children and their health status. The second part consisted of questions about the family's financial status, living conditions, education and health status, and psychosocial support status.

### 1.3. Analysis

The collected data were statistically analyzed using the IBM SPSS Statistics 25 package program. While the dependent variable of the study was determined as the completion of the childhood vaccines of children, the independent variables were determined as the child's demographic characteristics, health status, education status, family's financial status, living conditions, education status, health status, and psychosocial support status. Kolmogorov-Smirnov test was used to test the normal distribution of the data. Chi-squared analysis was conducted to identify the relationships between the dependent variable and the categorical independent variables. Independent-samples t-test was carried out to investigate whether the completion status of childhood vaccines among the children of the participants varied based on the continuous quantitative variables of the sum of rental payment, debt, bills, and size of the household. To determine the factors that affected the completion status of childhood vaccines, a model was developed for binary logistic regression analysis with the backward elimination method based on the likelihood ratio. The completion status of childhood vaccines was coded as a binary variable with the values "complete" and "incomplete". Accordingly, in the model, the completion status of childhood vaccines was included as the dependent variable, and the independent variables found to be related to the dependent variable were included as the explanatory variables for the analysis. In the analyses, the level of statistical significance was accepted as  $p < 0.05$ .

## 2. RESULTS

The descriptive characteristics of the children are shown in Table 1. As seen in Table 1, 55.6% of the children were male, 30% were 0-5 years old, and the childhood vaccination status of 67.6% was complete. 56.6% of the children had a vaccination plane in Turkey and 35.7% had their vaccination card in Syria.

**Table 1** The Distribution of Children by Their Descriptive Characteristics

Gender	Frequency (n)	Percentage (%)
Female	241	44,4
Male	302	55,6
<b>Age category</b>		
0-5 years	163	30,0
6-10 years	152	28,0
11-15 years	159	29,3
16-18 years	69	12,7
<b>Having diploma</b>		
No	483	94,1
Primary school	26	5,1
Secondary school	4	0,8
<b>Duration of school attendance in Turkey</b>		
Less than 6 months	21	24,4
Between 6 months-1 years	5	5,8
Between 1-2 years	5	5,8
More than 2 years	55	63,9
<b>Childhood vaccination</b>		
Completed	367	67,6
Not completed	97	17,9
Not known	79	14,5
<b>Country of Childhood Vaccinations*</b>		
Syria	230	43,4
Turkey	300	56,6
<b>Country of Obtained Vaccination Card*</b>		
Turkey	240	42,9
Syria	200	35,7
Both	40	7,2
No vaccination card	79	14,2

\* Participants ticked more than one option

In Table 2, the families' family structures, financial statuses, living conditions, health and education statuses, and psychosocial support statuses are summarized. As seen in Table 2, 44.2% of the families consisted of individuals at the ages of 6-17. The mean number of members in the households was  $7.03 \pm 2.56$  people. The most frequently stated income source was regular day jobs at a rate of 40.7%. Only one family member worked in 58.2% of the families. While 86.6% of the families paid bills every month, 89% paid rent. Among the families, 47.7% were not in debt. No income change was reported in the last three months by 39.4% of the families. While most of those who reported income change specified

that they were negatively affected by the COVID-19 pandemic, some reported increasing income because of starting to economic support. While 41.6% of the families were living in tents, another 41.6% were living in squatter houses. Children who were not in school despite being of school age were present in 39.7% of the families. There were no ill individuals in 87.6% of the families, not physically or mentally disabled individuals in 90.6%, and no incomplete childhood vaccines in 84.6%. The most frequently mentioned reasons for not getting vaccinated in the families were inadequate information and language problems.

**Table 2** The Distribution of Children's Families by Their Characteristics

Age categories for family members	Frequency (n)	Percentage (%)
0-5 years	743	19,4
6-17 years	1688	44,2
18-49 years	1259	32,9
50 years and older	127	3,3
<b>Financial situation</b>		
<b>Do you pay anything in utilities each month?</b>		
Yes	470	86,6
No	54	9,9
I don't know	18	3,3
<b>Do you pay rent each month?</b>		
Yes	483	89,0
No	52	9,6
I don't know	8	1,5
<b>Does the family have any debt?</b>		
Yes	157	28,9
No	259	47,7
I don't know	124	22,8
<b>Household income (TL)</b>		
<b>Amount of debt (TL)</b>	2.100,55±2.257,31	
<b>Other household expenses (TL)</b>	338,03±89,60	
<b>Amount of rent (TL)</b>	1.725,51±1.327,79	
<b>Amount of utilities (TL)</b>	173,29±108,92	
<b>Households' primary source of income</b>		
Casual work	111	20,4
Regular job	221	40,7
ESSN	211	38,9
<b>Number of people earning money for the household</b>		
0	159	29,3
1	316	58,2
≥2	63	11,6
<b>In the last 3 months have there been any changes to your monthly income</b>		

Yes	195	36,5
No	210	39,4
I don't know	128	24,0
<b>Living conditions</b>		
<b>The condition of shelter</b>		
Unfinished building	20	4,3
Tent	192	41,6
Apartment	22	4,7
Squatter's house	192	41,6
Room	35	7,5
<b>The safety of shelter</b>		
Yes	343	63,3
No	200	36,7
<b>Source of heat</b>		
Gas heater	12	2,2
Electric heater	149	28,0
Use wood to heat	261	49,1
Coal heater	109	20,5
<b>Health status</b>		
<b>Is there any member of your household sick injured or suffering a mental disability</b>		
Yes	67	12,4
No	473	87,6
<b>Is there any member of household suffering from a physical or mental disability</b>		
Yes	51	9,4
No	492	90,6
<b>Is there any member of household who does not have their vaccinations</b>		
Yes	82	15,4
No	449	84,6
<b>The main reason of not receiving their vaccination</b>		
Lack of knowledge on where to seek consultation or treatment	35	43,8
Lack of translators	25	31,2
Covid-19 Pandemic	20	25
<b>Parent's Opinion on Child Not Vaccination</b>		
I can't reach institutions where I can get vaccinated	65	68,5
I don't think it should be vaccinated	20	21,0
I don't believe in vaccine protection	10	10,5
<b>Educational Status of the Family</b>		
<b>Mother's Education Level</b>		

Illiterate	529	47,1
Primary school graduate	452	40,2
High school graduate	116	10,3
University and above	26	2,3
<b>Father's Education Level</b>		
Illiterate	451	40,1
Primary school graduate	496	44,1
High school graduate	116	10,3
University and above	60	5,3
<b>Anyone in the household who is not attending school and is required to attend school</b>		
Yes	206	39,7
No	312	60,2
<b>Psychosocial support</b>		
<b>Having good relationship with the Turkish people</b>		
Yes	431	79,7
No	112	20,3
<b>Having the same hobbies or habits now that you had in your country of origin</b>		
Yes	116	21,5
No	423	78,4

In Table 3, the distribution of childhood vaccinations in families according to the vaccination schedule. Hepatitis B and BCG are the most frequently administered vaccines as 78.9%, while tetanus and diphtheria are the least administered vaccines as 47.8%.

**Table 3** The Completion Status of Each of Childhood Vaccines of Children

	Time of vaccination	Completed		Not completed	
		Frequency	Percent	Frequency	Percent
<b>Hepatitis B</b>	Birth, 1 month, 6 months	886	78,9	236	21,0
<b>BCG</b>	2 months	886	78,9	236	21,0
<b>DTaP-IPV-HIB</b>	2 months, 4 months, 6 months, 18 months (booster vaccination)	883	78,6	239	21,3
<b>Pneumococcus</b>	2 months, 4 months, 6 months, 13 months (booster vaccination)	878	78,2	244	21,7
<b>MMR</b>	12 months, 48 months	786	70,0	336	29,9
<b>DTaP-IPV</b>	48 months (booster vaccination)	760	67,7	362	32,2
<b>Oral Polio</b>	6 months, 18 months	838	74,6	284	25,3

<b>Tetanus And Diphtheria</b>	13 ages (booster vaccination)	537	47,8	585	52,1
<b>Hepatitis A</b>	18 months, 24 months	764	68,0	358	31,9
<b>Varicella</b>	12 months	792	70,5	330	29,4

Table 4 presents the relationships between the completion status of the childhood vaccines of the children and some characteristics of the children and families. Accordingly, complete childhood vaccination rates were higher among the children at the ages of 0-5 compared to those in other age groups, among those who were not paying rent compared to those who were, among those who were not in debt compared to those who were, among those who experienced income change in the last three months compared to those who did not, among those who had lower rates of children of school age not attending school compared to those with higher rates, and among those who were less able to maintain their habits and hobbies in their home country compared to those who were more able ( $p<0.05$ ). Additionally, it was determined that the families that had a complete childhood vaccination status paid more rent and bills, were living in more crowded households, and the number of family members in the 6-17 age group was higher in these families ( $p<0.05$ ).

**Table 4** The Factors Affecting the Completion Status of Childhood Vaccinations

Age category	Completed		Not completed		p
	Frequen- cy	Percent	Frequen- cy	Percent	
0-5 years	98	60,1	65	39,9	0,000*
6-10 years	30	19,7	122	80,3	
11-15 years	31	19,5	128	80,5	
16-18 years	17	24,6	52	75,4	
<b>Do you pay rent each month?</b>					
Yes	146	30,2	337	69,8	0,002*
No	30	50,0	30	50,0	
<b>Does the family have any debt?</b>					
Yes	37	23,6	120	76,4	0,003*
No	139	36,3	244	63,7	
<b>Amount of rent (TL)</b>	<b>322,61±68,79</b>		<b>344,87±96,74</b>		<b>0,017*</b>
<b>Amount of utilities (TL)</b>	<b>144,37±47,05</b>		<b>187,03±126,04</b>		<b>0,000*</b>
<b>Households' primary source of income</b>					
Casual work	18	16,2	93	83,8	0,000*
Regular job	95	43,0	126	57,0	
ESSN	63	29,9	148	70,1	
<b>In the last 3 months have there been any changes to your monthly income</b>					
Yes	76	39,0	119	61,0	0,005*
No	94	27,8	244	72,2	
<b>The condition of shelter</b>					



Tent	8	40,0	12	60,0	0,022*
Unfinished building	79	41,1	113	58,9	
Apartment	2	9,1	20	90,9	
Squatter houses	11	31,4	24	68,6	
Room	2	16,7	10	83,3	
<b>Source of heat</b>					
Gas heater	1	8,3	11	91,7	0,013*
Electric heater	56	37,6	93	62,4	
Use wood to heat	71	27,2	190	72,8	
Coal heater	43	39,4	66	60,6	
<b>Household structure</b>					
6-17 years	2,60±1,97		3,34±1,80		0,000*
Household size	6,49±2,07		7,29±2,73		0,001*
<b>Educational Status of the Family</b>					
<b>Mother's Education Level</b>					
Illiterate	301	56,9	228	43,1	0,004*
Primary school graduate	296	65,4	156	34,6	
High school graduate	80	69,0	36	31,0	
University and above	19	74,1	7	25,9	
<b>Father's Education Level</b>					
Illiterate	195	43,3	256	56,7	0,000*
Primary school graduate	338	68,1	158	31,9	
High school graduate	81	69,8	35	30,2	
university and above	45	74,4	15	25,6	
<b>Anyone in the household who is not attending school and is required to attend school</b>					
Yes	52	25,2	154	74,8	0,005*
No	113	36,2	199	63,8	
<b>Having the same hobbies or habits now that you had in your country of origin</b>					
Yes	21	18,1	95	81,9	0,000*
No	153	36,2	270	63,8	

\* $p < 0,05$

Table 5 shows the binary logistic regression model that was formed to determine the factors that affected the completion status of the childhood vaccines in the children of the participants. It was found that the independent variables in the model explained 63% of the total variance in childhood vaccination completion status (Nagelkerke  $R^2$ ), and the accurate classification rate of the variables was 84.5%. According to the model, the probability of being in the group with incomplete childhood vaccination was higher among the children over the age of 5 compared to those in the age group of 0-5 (respectively, OR=21.28; OR=72.29; OR=144.95), among the families with members of school age who were not in school compared to those who did not have such family members (OR=5.349), and among those paying more bills (OR=1.023) ( $p < 0.05$ ).

**Table 5** The Results of Binary Logistic Regression Analysis of Independent Variables Associated with Not Completed Status of Childhood Vaccination Among Children

The completed status of Childhood vaccination (not completed)	Beta (OR)	%95 CR	p
Age (6-10 years)	21,285	7,120-63,627	0,000*
Age (11-15 years)	72,294	17,531-298,122	0,000*
Age (16-18 years)	144,958	14,067-1493,727	0,000*
Anyone in household not attending school (No)	5,349	1,738-16,463	0,003*
Utilities (TL)	1,023	1,013-1,033	0,000*
Any changes in monthly income in last three months (No)	0,312	0,077-1,266	0,103
Source of heat (Electric heater)	0,000	0,000-	0,998
Source of heat (Wood to heat)	1,203	0,492-2,942	0,686
Source of heat (Coal heater)	1,109	0,000-	0,931

\* $p < 0.05$ , OR: Odds Ratio, CR: Confidence Range

### 3. DISCUSSION

In this study, the factors affecting the completion status of childhood vaccines among 543 children of Syrian refugee seasonal farmworker families in Sanliurfa, Turkey were examined. It was determined that 67.6% of the children at the ages of 0 to 18 who were included in this study were fully vaccinated. Among these children, the rates of those who were fully vaccinated were 60.1% in the age group of 0-5, 19.7% in the age group of 6-10, and 19.5% in the age group of 11-15. Thus, the complete vaccination rate of the children at the ages of 0-5 was significantly higher than the rates of those in the age groups of 6-11 and 11-15. The inverse relationship between the ages of the Syrian children and their complete vaccination rate showed that their vaccine follow-ups were carried out more inadequately as they grew up. In their study on the vaccination statuses of children migrating to Turkey from Syria, Binici and Börekci (2021) similarly reported that 47.8% of children aged 0-5 were fully vaccinated, while the complete vaccination rate in the age group of 11-15 was 10.3%. In the study conducted by WHO in 2019 about the vaccination statuses of Syrian children aged 0-5 living in Turkey, it was stated that the vaccination rates among these children were over 50% for all required vaccines except the chickenpox and Hepatitis A vaccines (Mipatrini et al., 2019). Nakken et al. (2018) reported that 67% of Syrian, Afghan, Iranian, Iraqi, Somali, Eritrean, and Palestinian refugee children in Denmark were vaccinated, while similarly 40% of those at the ages of 0-5 and 29% of those at the ages of 6-11 were vaccinated. In contrast, in their study conducted in Queensland with refugee children from Southeast Asia, Melanesia, South America, Sub-Saharan Africa, and West Asia, Nyanchohga et al. (2021) highlighted that the vaccination rate of children aged 10-19 was 74%, which was 11% higher than the vaccination rate of those below the age of 10.

In this study, it was seen that 94.1% of all children had not received a diploma from any school in Syria or Turkey, and 63.9% had attended school for longer than two years in Turkey. It was found that 74.8% of the children of school age who were not in school were not fully vaccinated. On the flip side, the rate of complete vaccination was higher among the children attending school. Therefore, the inadequacy of complete vaccination among children who were not in school showed the relationship between health and education policies for refugee children. Accordingly, it is greatly important for both policies to reinforce each other (Yıldırım et al., 2019). While it is crucial for refugee children to conduct school-based vaccination efforts, the access of children who are not in school to vaccines should be facilitated through catch-up vaccination campaigns. In the study in which they determined the vaccination needs of refugee children, Chai et al. (2012) revealed that 80% of refugee children of school age required at least one childhood vaccine. Bocquier et al. (2017) determined that the vaccination rates of refugee children in Western Sydney were low, and they emphasized the need for the development of catch-up vaccination programs out of the school in addition to school-based vaccination.

It was determined in this study that 15.4% of the family members of the participants were missing some childhood

vaccines. The families explained these missing vaccines mostly by inadequate information and language barriers. The studies conducted with Syrian refugees by Kalkan et al. (2014) and Onal and Keklik (2016) also identified the main reason for not getting vaccinated as language problems. The data published by the Disaster and Emergency Management Presidency of Turkey (AFAD) also pointed to the language barrier as a reason for lower vaccination rates than desired among Syrian refugees (AFAD, 2022).

In the examination of the factors affecting the childhood vaccination statuses of the participants based on the financial statuses of the families, it was determined that the rates of incomplete vaccination were higher among the participants who were in debt than those who were not in debt, among those whose source of income was not regular day jobs than those whose source of income was day jobs, and among those who did not experience income change in the last three months than those who did. It was also learned that families with higher rates of full immunization during childhood had higher power/capacity to pay rent and bills. Thus, it was seen that as financial difficulties increased, the rates of complete vaccination decreased. Similarly, Binici and Börekci (2021) reported higher rates of complete vaccination among Syrian refugees who had more income than their expenses and those who had income equivalent to their expenses in comparison to those whose income was lower than their expenses. There are other studies showing that the low socioeconomic status in refugee families affects their access to health services and vaccines negatively (Kasuma et al., 2010; Kpozehouen et al., 2017; Mishra et al., 2020).

When the factors affecting the childhood vaccination status are examined in terms of the education level of the families, it is seen that the rate of being fully vaccinated increases as the education level increases. There are other studies in the literature that reveal similar relationship (Chung et al., 2016; Kmeid et al., 2019).

In this study, regarding the living conditions of the families, it was observed that those who had higher rates of complete childhood vaccination were living in more crowded households, and they had higher numbers of family members in the age group of 6-17. Regarding the housing situations of the participants whose children were not fully vaccinated, the rate of those who were living in apartments was higher than the rates of those who were living in single rooms, squatter houses, tents, or unfinished buildings. Thus, although living in an apartment may indicate better living standards for refugee seasonal farmworker families, this was not found as a factor that increased vaccination rates. As opposed to the result in this study, Binici and Börekci (2021) reported higher rates of complete vaccination among families living in apartments compared to those living in temporary shelters or tents. In addition, other studies have determined that refugee seasonal farmworker families, those mostly living in tents had lower levels of access to healthcare services than others (Connor et al., 2010; Oztas et al., 2018; STL, 2021).

The results of this study should be interpreted along with some limitations. First, because these results are based on a cross-sectional field study, they cannot be generalized. Second, only Syrian seasonal farmworker families living in Şanlıurfa were included in the study. There is a need for studies to be carried out with a broader sample of them in different provinces. Third, in future studies, it may be useful to collect more detailed sociodemographic information from families.

#### 4 CONCLUSION

It is not possible to come across satisfying studies on the vaccination status of children of refugee seasonal farmworker families both in Turkey and in the international literature. Even though there are such studies on refugee children, there are not many significant studies on the refugee seasonal farmworker families which is a difficult group to reach. It is thought that this study will fill such a gap in terms of access to health services and vaccines for the children of these groups.

The results of this study demonstrated that as the children of the Syrian seasonal farmworker families who were included in this study became older, their completion rates of required childhood vaccines dropped. For this reason, it is recommended to follow up on the vaccination schedules of especially school-age children by conducting school-based efforts and compensate for missing vaccines through catch-up vaccination campaigns. The complete vaccination rate among the school-age children who did not go to school was also low. Accordingly, interventions to facilitate the utilization of education and healthcare rights by children may be planned. Another issue in the context of the results of this study was the presence of family members who were not fully vaccinated among the families included in the sample. Regarding this issue, it is recommended to eliminate the unavailability of interpreters and insufficient information about

healthcare rights and how to utilize these rights, which are seen as barriers to the access of refugees to healthcare services and vaccines. Consequently, it is seen that factors such as being in debt and having a regular day job affect the complete vaccination statuses of individuals. Hence, it is believed that social policies towards increasing the socioeconomic levels of refugee families will be reflected positively on healthcare policies specific to vaccination.

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