

Vaccination Hesitancy in Parents with Children Aged under Five Years who Apply to a Family Health Centre

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Abstract

Introduction: This study aimed to determine the factors that cause vaccine hesitancy in parents with children under five years of age who applied to a family health center, to examine parents' behaviors and their motives for vaccine hesitancy, and to make recommendations for parents in their decisions regarding their childhood vaccines.

Materials and Methods: The researcher collected the data from parents who applied to two Family Health Centers in the city center of Elazığ for several reasons: were over 18 years of age, agreed to participate in the study, and had children under the age of five (n= 123). An Individual Information Form prepared by the researchers based on the literature and the Vaccine Hesitancy Questionnaire, and the Vaccine Hesitancy Scale (VHS) developed by the World Health Organization Strategic Advisory Group of Experts Working Group on Vaccine Hesitancy.

Results: Despite no statistically significant difference in this study, it was found that those who were aged between 19 and 25 years, had a son, were fathers, were married, had employed mothers, and had unemployed fathers had higher mean ranks of VHS. The VHS scores of those with low educational levels in mothers and fathers who had low educational levels were unaware of how their spouses felt about vaccination and reported that they had been informed negatively about vaccination differed from each other.

Conclusion: The parents are hesitant about the vaccination of their children for several reasons. Families who hesitate to vaccinate their children should be fought socially, and their awareness should be raised.

Key words: Vaccination; vaccine hesitancy; children under five; parents.

Introduction

Biological substances that are developed by purifying the pathogenic properties of microorganism, such as viruses and bacteria, that cause disease in humans and provide immunity when administered to the body are called vaccines (1). Vaccination is the injection of attenuated viruses or bacteria into the body appropriately in order to reduce and eradicate the possible damage to individuals and society due to diseases that lead to morbidity and mortality (2). Vaccination is one of the most widely applied preventive practices in the world for the prevention of diseases. According to the World Health Organization (WHO), vaccination can prevent approximately one-fifth (17%) of the deaths under 5 years of age worldwide (3). According to the WHO report, vaccination programs prevented 2-3 million deaths annually and lowered mortality from measles by 73% globally (4). Over the last decade, many public health specialists have reported that dissatisfaction with vaccination has increased (5). Based on this fact, researchers have conducted studies on this attitude that parents exhibit. Consequently, they introduced the terms “vaccine

hesitancy” or “vaccine refusal” (6). Following the introduction of these concepts, WHO has defined them in various ways. The term Vaccine Hesitancy means “refusal or delay in vaccines despite the availability of vaccination services” (4). Individuals who hesitate to get vaccinated are not only considered as individuals who delay or refuse to get vaccinated. Especially the concerns and hesitations that parents feel even if they accept getting vaccinated are also included in the concept of “vaccine hesitancy”. These concerns and hesitations include concepts such as reluctance, doubt, and distrust (7). Anti-vaccination, which is rapidly increasing in Türkiye was 183 in 2011 and has increased continuously over the years, reaching twenty-three thousand as of 2018 and over forty thousand as of 2019 (8). This study aimed to determine the factors that cause vaccine hesitancy in parents with children under five years of age who applied to a family health center, to examine parents' behaviors and their motives for vaccine hesitancy, and to make recommendations for parents in their decisions regarding their childhood vaccines.

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Materials and Methods

The study was conducted using the quantitative method and descriptive cross-sectional design. The researcher collected the data from parents who applied to two Family Health Centers (FHCs) in the city center of Elazığ for several reasons: were over 18 years of age, agreed to participate in the study, and had children under the age of five. The researcher selected the centers by the purposive sampling method. The researchers preferred the convenience sampling method for sample size and access to the sample and collected data from the applicants between June 2023 and August 2023. As a purposeful sample, two health centers that have a moderate socioeconomic level and are located in the city center since it would be easy for survey application were determined (Family Medicine Centers No. 91 and 105, affiliated with Çaydağra No. 2 FHC, located in the city center of Elazığ). They collected the data through face-to-face interviews. They informed the participants with the informed consent form appended to the questionnaire, which included the principles of the Declaration of Helsinki, and the inclusion criteria were determined as follows: being voluntary to participate, having a child under the age of five, and being registered at an FHC. The exclusion criteria were withdrawal from the study during or after the completion of the questionnaire. The people included in the study were informed in detail and the purpose of use was explained. Participants' dictionaries and writings were taken. Sociodemographic data, past medical history, and vaccination status of their children were questioned by face-to-face interview technique using the Patient Information Form created by us. We broke the Vaccine Hesitancy Scale (VHS) record to determine parents' characteristics towards vaccination. The study was completed with 123 participants. A post-hoc power analysis was done over the total number of participants. For this bidirectional analysis, the sample size was determined as 72 for the first group and 51 for the second group at the effect size of 0.5 and the α err prob of 0.07. Following the calculations, Power ($1-\beta$ err prob) was found to be 0.85 (i.e., sufficient).

Data collection tools: An Individual Information Form (9 items) prepared by the researchers based on the literature and the Vaccine Hesitancy Questionnaire, and the Vaccine Hesitancy Scale developed by the WHO SAGE (World Health Organization Strategic Advisory Group of

Experts) Working Group on Vaccine Hesitancy (9, 10).

- Vaccine Hesitancy Scale (VHS): Larson et al. (9) developed the Vaccine Hesitancy Scale (VHS), and Soysal et al. (10) conducted its Turkish validity and reliability study. The Vaccine Hesitancy Scale is a five-point Likert scale, including ten propositions about vaccines: 1= strongly disagree, 2= disagree, 3= undecided, 4= agree, and 5= strongly agree. Some items on the Vaccine Hesitancy Scale (M5, M9, and M10) are expressed in the reverse sense of the other items. A higher response value for these items on the original version of the scale indicates higher vaccine hesitancy, while higher response values for other items indicate lower vaccine hesitancy (9, 11). The highest and lowest scores on the scale are 50 and 10, respectively. The original version of the scale consists of 10 items and is a five-point Likert scale. Responses to the questions are rated as 1= strongly disagree, 2= disagree, 3= undecided, 4= agree, and 5= strongly agree. In this study, items of the scale were determined as seven. Cronbach's alpha value in its Turkish version was reported to be 0.83. The lowest and highest scores of the scale are 7 and 45, respectively. In the present study, Cronbach's alpha value was found to be 0.91.

In the study, the first part of the survey form consisted of descriptive characteristics of the parent (such as whether the interviewed parent was the mother or father, their age, marital status, educational level, and employment status), the second part included descriptive characteristics of the child (such as age, gender, birth order, number of siblings), and the third part comprised questions from the WHO SAGE (World Health Organization Strategic Advisory Group of Experts) Vaccine Hesitancy Survey. The first and second parts were considered independent variables in the study, while the third part was treated as the dependent variable.

Ethical considerations: Before the study, approval from the ethics committee of Gaziantep Islamic Science and Technology University (protocol 2023/212 approval date: 02.05.2023) was taken for the study, and institutional permission from the Provincial Health Directorate was obtained (protocol 2023/216589924 approval date:31.05.2023). Written consent was obtained from all participants.

Table 1: Characteristics of the Participants (n= 123)

Characteristics		n	%
Age range	19-25 years old	18	14.6
	26-35 years old	59	48.0
	36 years and older	46	37.4
Participant	Mother	72	58.5
	Father	51	41.5
Marital Status	Married	108	87.8
	Single/Widow/Divorced/Separated	15	12.2
	Illiterate	3	2.4
Mother's Educational Level	Literate	16	13.0
	Primary/Secondary school	9	7.3
	High school graduate	50	40.7
	Associate's degree	20	16.3
Mother's Employment	Bachelor's degree	19	15.4
	Master's degree	6	4.9
	Unemployed	82	66.7
	Employed	41	33.3
	Literate	3	2.4
Father's Educational Level	Primary/Secondary school	14	11.4
	High school	32	26.0
	Associate's degree	17	13.8
	Bachelor's degree	39	9.8
	Master's degree	12	9.8
Father's Employment	Doctorate's degree	6	4.8
	Unemployed	6	4.9
	Employed	117	95.1
Income status	Good	54	43.9
	Moderate	37	30.1
	Poor	21	17.1
	Very poor	11	8.9

Table 2: Characteristics of the participants' children (n= 123)

Characteristics		n	%
Child's Gender	Girl	65	52.8
	Boy	58	47.2
Breastfeeding	Yes	120	97.6
	No	3	2.4
Vitamin supplementation	Yes	2	1.6
	No	121	98.4
Source of information on child vaccination	Parental declaration	22	17.9
	Immunization card	52	42.3
	Both	49	39.8

Statistical analysis[X1][X2][X3]: The IBMSPSS Statistics version 22 was used to analyze the data. The categorical data were expressed in numbers and percentages. Three methods were employed for normality analyses: In the calculation method descriptives were examined (coefficient of variation, skewness, and kurtosis values); in the graphical method, stem and leaf, box plot, Q-Q plot, detrended, and histogram curves were analyzed; and in hypothesis testing, Z statistics and Kolmogorov-Smirnov values were investigated. For numerical data, nonparametric

[X4] analysis was done. Spearman's correlation analysis, Mann-Whitney U test, and Kruskal-Wallis test were applied. $p < 0.05$ was accepted as the statistical significance level.

Results

The mean age of the participants was 34.00 ± 7.60 years. While 58.5% of the participants consisted of mothers, 41.5% consisted of fathers. Table 1 shows the socio-demographic characteristics of the participants. Table 2 shows the characteristics of the children. The participants stated that the

Table 3: Experiences of the participants with vaccination for immunization of their children (n=123)

Characteristics		n	%
The way of immunization	Fully vaccinated	100	81.3
	Under vaccinated	23	18.7
Side effects after vaccination	Yes	65	52.8
	No	58	47.2
Observation of others who have suffered side effects after vaccination	Yes	72	58.5
	No	51	41.5
Spouse's attitude toward vaccination	Pro-vaccine	79	64.2
	Anti-vaccine	15	12.2
	Hesitant on vaccination	23	18.7
	I do not know	6	4.9
The belief that the vaccine would protect the child from the disease	Yes	97	78.9
	No	26	21.1
Belief that parents are vaccinated	Believes	31	25.2
	Disbelieves	92	74.8
Hesitancy when getting their child vaccinated	Hesitated	32	26.0
	Not Hesitated	61	74.0
Receiving negative information about the vaccine	Yes	29	23.6
	No	94	76.4
Vaccination of their child despite negative information (n= 29)	Vaccinated	15	51.7
	Not Vaccinated	14	48.3
Community leaders who support vaccination where they live	Teachers	3	2.4
	Healthcare professionals	47	38.2
	Many people	73	59.4
The existence of pressure factors that prevent them from getting vaccinated	None	94	76.4
	Spousal pressure	26	21.1
	Family pressure	3	2.4

mean number of their children alive was 2.11 ± 1.00 (min: 1, max: 4). While 52.8% of the children were boys, 47.2% were girls. The participants reported that the mean number of children was 1.33 ± 1.14 (min: 1, max: 4), and the mean duration of their breastfeeding was 11.65 ± 6.56 months (min: 0, max: 24 months). All of the participants declared that they supplemented their children with vitamin D. Table 3 shows the experiences of the participants after the immunization of their children. 52.8% of the participants reported that their children suffered from side effects after vaccination. The side effects they reported included fever (n= 44, 67.7%), crying spells (n= 7, 10.8%), diarrhea/vomiting (n= 11, 16.9%), and pain-swelling-redness at the injection site (n=3, 4.6%). 64.2% of the participants stated that their spouses adopted a positive attitude toward vaccines. Reasons behind negative or hesitant attitudes toward vaccination were as follows: belief that vaccines are ineffective (n= 9, 23.7%), belief that they will make the child sicker at a later age (n= 12, 31.6%), belief that they will produce side effects (n= 9, 23.7%), belief that their children's genes are tampered with (n= 5, 13.2%), and distrust in vaccines (n= 3, 7.9%). The participants

responded "no" to whether they were subjected to any pressure that would hinder them from getting their children vaccinated on time, with a rate of 76.4%. In this study the characteristics of the VHS score was found 28.62 ± 5.57 (Mean \pm SD). Table 4 shows the factors that make a difference in participants' vaccine hesitancy. Despite no statistically significant difference in this study, it was found that those who were aged between 19 and 25 years, had a son, were fathers, were married, had employed mothers, and had unemployed fathers had higher mean ranks of VHS. The VHS scores of those with low educational levels in mothers (p= 0.001) and fathers (p= 0.001) who had low educational levels were unaware of how their spouses felt about vaccination (p= 0.001) and reported that they had been informed negatively about vaccination (p=0.024) differed from each other. Table 5 shows the correlation between some characteristics of the participants and their VHS scores. As shown, there is a negative correlation between the VHS score and the parental age, the age of the last child vaccinated, the birth order of the children, and the number of children.

Table 4: Distribution of vaccine hesitancy according to some characteristics (N=123 [X1])

Characteristics	n	VHS Median*	IQR	Test and p-value
Parental Age Range	19-25 years old	18	32.00	KW= 5.747 p= 0.057[X2]
	26-35 years old	59	31.00	
	36 years and older	46	29.00	
Participant	Mother	72	31.00	U= 1563.000 p= 0.125
	Father	51	31.00	
Marital Status	Married	108	31.00	U= 757.500 p= 0.657
	Single/Widow/Divorced/Separated	15	31.00	
	Illiterate	3	32.00 ^{a,b}	
Mother's Educational Level	Literate	16	21.00 ^{c,d}	KW= 28.810 p= 0.001
	Primary/Secondary school	9	23.00 ^{e,f}	
	High school	50	31.00 ^{a,c,e}	
Mother's Employment	Associate's degree	20	31.50	U= 1625.000 p= 0.742
	Bachelor's degree	19	32.00 ^{b,d,f,g}	
	Master's degree	6	32.00 ^g	
	Unemployed	82	31.00	
Father's Educational Level	Employed	41	31.00	KW= 33.126 p= 0.001
	Literate	3	20.00	
	Primary/Secondary school	14	21.00	
	High school	32	31.00 ^a	
	Associate's degree	17	32.00	
Father's Employment	Bachelor's degree	39	31.00 ^a	U= 277.500 p= 0.345
	Master's degree	12	32.00	
	Doctorate's degree	6	32.00	
	Unemployed	6	25.00	
Perception of Income status	Employed	117	31.00	KW= 6.984 p= 0.030
	Good	54	31.50	
	Moderate	37	31.00	
	Poor	21	23.00	
Side effects after vaccination	Very poor	11	28.00	U= 1783.500 p= 0.573
	Yes	65	30.00	
	No	58	31.00	
Spouse's attitude toward vaccination	Pro-vaccine	79	32.00 ^a	KW= 27.816 p= 0.001
	Anti-vaccine	15	23.00 ^b	
	Hesitant on vaccination	23	21.00	
	I do not know	6	25.00 ^{a,b}	
Receiving negative information about the vaccine	Yes	29	21.00	U= 1016.500 p= 0.024
	No	94	32.00	

IQR: Interquartile range, **KW:** Kruskal Wallis Test, **U:** Mann Whitney U Test, **VHS:** Vaccine Hesitancy Scale ^{a, b, c, d, e, f, and g} indicate groups with differences.

Table 5: The correlation between the VHS scores and some characteristics of the participants (N=123)

	Parent's age	Child's age	Birth Order of the Child	Number of Children
VHS	r	-.203*	-.224*	-.492**
	p	0.025	0.013	0.001

*: Spearman correlation at the level of 0.05, **: correlation at the level of 0.01

Discussion

The mean age of the participants in the present study which was conducted to determine vaccine hesitancy in the parents with children under the age of five who attended the family health center was 34.00 ± 7.60 years (min: 19, max: 51), and the

participants consisted of mothers (58.5%) and fathers (41.5%). In their study, Üzümlü et al. found that the parental age range was 30-39 years, and a similar study conducted by Aygün and Tortop in 2020 reported that a great majority of the participants were female and 22% were aged 20-30

years (12,13). Vaccines carry several side effects, as identified through phase studies. Surveillance of adverse effects after vaccination is crucial for monitoring and evaluating these side effects. Surveillance of adverse effects after vaccination will allow to identify the incidence of side effects and various precautions can be taken to address gaps in knowledge, malpractice, and misconceptions. A circular on adverse effects after vaccination was issued in 2003 in order to carry out surveillance properly in this context (14). Adverse effects after vaccination can manifest themselves in many different patterns. Generally, symptoms such as redness and swelling at the injection site, pain, fever, vomiting, and fatigue are considered mild side effects and require no reporting (15). 52.8% of the participants in the present study reported that their children developed side effects after vaccination. The side effects they reported included fever (44 people, 67.7%), crying spells (7 people, 10.8%), diarrhea/vomiting (11 people, 16.9%), and pain-swelling-redness at the injection site (3 people, 4.6%). In the literature, the incidence of developing side effects after vaccination in children ranges from 5.2% to 73.7%, and the most reported side effect was fever, which is compatible with the present study (16,17). The side effects of the vaccine may agitate parents after vaccination and raise their hesitation about getting their children vaccinated in the future. Therefore, nationwide surveillance of adverse effects after vaccination aims to ensure safer administration of vaccines (15). Vaccine hesitancy is defined as the delay or refusal of acceptance of vaccines despite the availability of vaccination services. Individuals who hesitate to get vaccinated may accept all vaccines but keep worrying about vaccines; some may refuse or delay some vaccines but accept other vaccines; and some individuals may refuse all vaccines (18,19). In the present study, the reasons behind negative or hesitant attitudes toward vaccination (n=38) were the belief that vaccines are ineffective (9 people, 23.7%), the belief that they will make the child more sick at a later age (12 people, 31.6%), belief that they will produce side effects (9 people, 23.7%), belief that their children's genes are tampered with (5 people, 13.2%), and distrust in vaccines (3 people, 7.9%). A study conducted in the Philippines reported that the main motives for parents to refuse at least one vaccine for their children included negative information in the media and concerns about the safety and side effects of vaccines (20). In their study, Miko et al., (21) showed that vaccine hesitancy was attributed to negative news in the

media. Since hesitancy is a state of indecisiveness, it is difficult to assess it. Indecisiveness is a critical period to engage and support the decision-making process. However, forcing individuals to vaccinate, even if it is for the protection of both themselves and their children from diseases, may produce the reverse effect. In such a case, effective and efficient listening to individuals allows the public to easily speak out their vaccine hesitations and concerns and makes it easier for healthcare professionals to gather many clues for intervention (22). 76.4% of the participants responded "no" to whether they were subjected to any pressure that would hinder them from getting their children vaccinated on time. When the correlation between some characteristics of the participants and their VHS scores was analyzed, a negative correlation was found between their VHS scores and parent's age, the age of the last child vaccinated, the birth order of the children, and the number of children. In their study, Giambi et al., found that individuals over 35 years of age were less hesitant (23). A study by Özlem reported that as the age of the parents rose, their distrust toward vaccination intensified, which is contrary to the present study (24). The study by Topçu, on the other hand, revealed no correlation between mother's and father's ages and vaccine hesitancy (25). While the present study found no significant correlation between the gender of the children and VHS, the study by Dasgupta et al., associated vaccine hesitancy with the children who were male and had the birth order after the second child (26). Gülgün et al., (2014) determined that having three or more siblings negatively affected vaccination (27). The present study revealed that the VHS scores differed in mothers and fathers with a low educational level and in those who reported that they had been informed negatively about vaccination. The study conducted by Topçu et al., with 132 participants, including 33 participants who refused vaccination and 99 participants in the control group, reported that parental educational level was lower in the group who refused vaccination (25). Finally, it was found that parental fears and concerns about vaccines were largely influenced by the sharing of misinformation and the statements of anti-vaccine communities on social media (28, 29).

Study limitations: Since the study was conducted in 2 health centers affiliated with a Family Health Center and the sample size was limited, the results of the study cannot be generalized to all parents with children under

the age of five throughout the province and country.

Conclusion

The present study showed that there was a difference in the VHS scores in mothers and fathers with low educational level, in those who were unaware of how their spouse felt about vaccination, and in those who reported that they had been informed negatively about vaccination. On the other hand, there was a negative correlation between the VHS scores and parent's age, the age of the last child vaccinated, the birth order of the children, and the number of children. In a general sense, we can assert that the parents who participated in the study had a high level of vaccine hesitancy. Immunization is one of the biggest public health developments of the last century. Several diseases and symptoms can be controlled with vaccines. Despite this fact, parents are hesitant about the vaccination of their children for several reasons. Families who hesitate to vaccinate their children should be fought socially, and their awareness should be raised. In particular, counselling of parents by healthcare professionals will contribute to the reduction or elimination of vaccine hesitancy. It is recommended to increase scientific studies on vaccination and its effects and offer solutions based on the outcomes of these studies. Country policies and improvements to the ways and conditions of vaccine administration will help to reduce parents' vaccine hesitancy.

Ethics committee approval: Before the study, approval from the ethics committee of Gaziantep Islamic Science and Technology University (protocol 2023/212 Approval date: 02.05.2023) was taken for the study, and institutional permission from the Provincial Health Directorate were obtained (protocol 2023/216589924 approval date: 31.05.2023).

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References

1. Barutçu A, Ezgi Ç, Evliyaoğlu N. Çiçek Hastalığı Epidemisinde Covid-19 Pandemisine; Aşı Kararsızlığı ve Aşı Reddi.

- Archives Medical Review Journal. 2021;30(4):243-50.
2. Filiz M, Kaya M. Systematic review of studies to determine factors affecting vaccine rejection/instability/contrast. TURAJAS 2019;2(2):1-7.
3. WHO. Global Immunization Data 2014. Available from: https://www.who.int/immunization/monitoring_surveillance/global_immunization_data .Accessed (28.09.2023).
4. WHO. Immunization coverage 2019. Available from: <https://www.who.int/news-room/factsheets/detail/immunization-coverage> .Accessed (30.09.2023).
5. Black S, Rappuoli R. A crisis of public confidence in vaccines. SCI TRANSL MED 2010; 2(61):61mr1.
6. Gür E. Vaccine hesitancy - vaccine refusal. Türk Pediatri Arsivi. 2019; 54(1): 1–2.
7. Peretti-Watel P, Larson HJ, Ward JK, Schulz WS, Verger P. Vaccine hesitancy: clarifying a theoretical framework for an ambiguous notion. PLoS Curr 2015;1:7.
8. Gür E. Vaccine hesitancy - vaccine refusal. Türk Pediatr Ars 2019;54(1):1–2.
9. Larson HJ, Jarrett C, Schulz WS, Chaudhuri M, Zhou Y, Dube E, vd. Measuring vaccine hesitancy: The development of a survey tool. Vaccine 2015;33(34):4165-4175.
10. Soysal G, Akdur R, Yöntem MK. Beş yaş altı çocukların ebeveynlerinde Aşı Tereddüt Ölçeği'nin geçerlilik ve güvenilirliği. ESTUDAM Public Health Journal 2022;7(2):361-367.
11. Ren J, Wagner AL, Zheng A, Sun X, Boulton ML, Huang Z, et al. The demographics of vaccine hesitancy in Shanghai, China. PLoS One 2018;13(12):e0209117.
12. Üzüm Ö, Eliaçık K, Hortu Örsdemir H, Karadağ Öncel E. Ebeveynlerin aşı yaklaşımlarını etkileyen faktörler: Bir eğitim araştırma hastanesine ilişkin değerlendirme. J Pediatr Inf 2019;13(3):144-149.
13. Aygün E, Tortop HS. Ebeveynlerin aşı tereddüt düzeylerinin ve karışıklık nedenlerinin incelenmesi. Güncel Pediatri 2020;18(3):300-316.
14. Bohlke K, Davis RL, Marcy SM, Braun MM, DeStefano F, Black SB et al. Vaccine safety data link team. risk of anaphylaxis after vaccination of children and adolescents. Pediatrics 2003;112(4):815-820.

15. Berera D, Thompson KM. Medical Student Knowledge, Attitudes, and Practices Regarding Immunization. *J Vaccines Vaccination* 2015;6(1):268.
16. Bianco A, Mascaro V, Zucco R, Pavia M. Parent perspectives on childhood vaccination: How to deal with vaccine hesitancy and refusal? *Vaccine* 2019;37(7):984-990.
17. Çıklar S, Güner PD. Knowledge, Behavior and Attitude of Mother's about Childhood Immunization and Reasons of Vaccination Rejection and Hesitancy: A Study of Mixt Methodology. *Ank Med J* 2020; 20(1):180-195.
18. Summary WHO SAGE conclusions and recommendations on Vaccine Hesitancy. Erişim adresi: https://www.who.int/immunization/programmes_systems/summary_of_sage_vaccinehesitancy_2pager.pdf. Accessed (28.09.2023).
19. The SAGE Vaccine Hesitancy Working Group. What Influences Vaccine Acceptance:A Model of Determinants of Vaccine Hesitancy. (İnternet. Erişim adresi: https://www.who.int/immunization/sage/meetings/2013/april/1_Model_analyze_driversofvaccineConfidence_22_March.pdf Accessed: 29.11.2023).
20. Migriño J, Gayados B, Birol KRJ, De Jesus L, Lopez CW, Mercado WC, et al. Factors affecting vaccine hesitancy among families with children 2 years old and younger in two urban communities in Manila, Philippines. *West Pac Surveill Response J WPSAR* 2020;11(2):20-26.
21. Miko D, Costache C, Colosi HA, Neculicioiu V, Colosi IA. Qualitative Assessment of Vaccine Hesitancy in Romania. *Med Kaunas Lith* 2019;55(6):E282.
22. Larson HJ. Negotiating vaccine acceptance in an era of reluctance. *Hum Vaccines Immunother* 2013; 9(8):1779-1781.
23. Giambi C, Fabiani M, D'Ancona F, Ferrara L, Fiacchini D, Gallo T, Martinelli et al. Parental vaccinehesitancy in Italy—results from a national survey. *Vaccine* 2018;36(6):779–787.
24. Özlem A. Çocukluk çağı aşılarında aşı reddine veya aşı tereddütüne yol açan sebeplerin araştırılması. Sağlık Bilimleri Üniversitesi, Ankara Keçiören Eğitim ve Araştırma Hastanesi, Çocuk Sağlığı ve Hastalıkları Anabilim Dalı, Tıpta Uzmanlık Tezi, 2020.
25. Topçu S, Almış H, Başkan S, Turgut M, Orhon FŞ, Ulukol B. Evaluation of Childhood Vaccine Refusal and Hesitancy Intentions in Turkey. *Indian J Pediatr* 2019;86(1):38-43.
26. Dasgupta P, Bhattacharjee S, Mukherjee A, Dasgupta S. Vaccine hesitancy for childhood vaccinations in slum areas of Siliguri, India. *Indian J Public Health* 2018;62(4):253-258.
27. Gülgün M, Fidancı K, Karaoğlu A, Güneş Ö, Kesik V, Altun S, et al. Bir Askeri Hastanenin Çocuk Polikliniğine Başvuran Çocukların 0-24 Ay Arasındaki Aşılama Durumlarının Değerlendirilmesi. *Gülhane Tıp Dergisi* 2014;56(1):13-16.
28. Wachob D, Boldy A. Social media's influence on parents' decision-making process of child vaccinations. *Epidemiology, Biostatistics and Public Health*. 2019;16(1):e13056-2.
29. Tustin JL, Crowcroft NS, Gesink D, Johnson I, Keelan J, Lachapelle B. Facebook recruitment of vaccine-hesitant canadian parents: cross-sectional study. *JMIR Public Health Surveillance* 2017;3(3):e47.