



Vaccination Approaches of Primary Healthcare Personnel and Their Communication Levels with Parents Having Childhood Vaccine Hesitancy

Birinci Basamak Sağlık Personelinin Aşılama Yaklaşımları ve Çocukluk Çağı Aşı Tereddütü Olan Ebeveynlerle İletişim Düzeyleri

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Abstract

Vaccines have saved more lives than any other health development in the 20th century. One of the most cost-effective programs for reducing infant/child morbidity and mortality is the vaccination of children against common vaccine-preventable diseases. Türkiye is one of the countries that has managed to achieve a significant reduction in the incidence of vaccine-preventable diseases by increasing immunization rates. Currently, 13 different antigens are included in the vaccination calendar of the Ministry of Health of the Republic of Türkiye, and all vaccines to be administered (vaccination calendar) are determined and continuously updated by the Immunization Advisory Board of the Ministry of Health of the Republic of Türkiye. Our study is a cross-sectional descriptive study. A total of 410 family physicians and family health workers were included in the study. An interactive training meeting on vaccines, vaccine hesitancy, communication, and counseling was organized in 18 groups (including the study participants) in May-June 2019. A questionnaire form consisting of 24 topics was applied to the participants before the training presentation. When comparisons between groups were analyzed according to the answers given by the participants to some questions, it was found that 57.1% of the group with a good average of knowledge, attitude and behavior score reflecting the level of communication with parents with vaccine hesitancy had received training on vaccines and their characteristics, while 43.6% of the group with a poor average had received this training, and the difference was statistically significant ($p=0.008$). Parents with vaccine refusal were most hesitant about Measles-Mumps-Rubella (MMR) vaccine (87.7%). Healthcare professionals play a very important role in the provision of healthcare services and in the decision-making of families about vaccination with the counseling they provide all over the world. To reduce vaccine hesitancy, continuous education activities on vaccination for health professionals, the creation of educational materials for public education, the use of mass media, and legal regulations can be made.

Keywords: Vaccination, Vaccine hesitancy, Communication, Healthcare professionals, Community education.

Özet

Aşılar, 20. yüzyılda diğer sağlık gelişmelerinden daha fazla hayat kurtarmıştır. Yenidoğan/çocuk hastalık ve ölümlerini azaltmaya yönelik en uygun maliyetli programlardan biri, çocukların toplumda yaygın

olarak görülen aşıyla önlenabilir hastalıklara karşı aşılama oranlarıdır. Türkiye, aşılama oranlarını artırarak aşıyla önlenabilir hastalıkların görülme sıklığını önemli ölçüde azaltmayı başaran ülkelerden biri olmuştur. Günümüzde Türkiye Cumhuriyeti Sağlık Bakanlığı aşılama takviminde 13 farklı hastalık için aşı yer almakta olup, uygulanacak tüm aşılar (aşılama takvimi) Türkiye Cumhuriyeti Sağlık Bakanlığı Bağıışıklama Danışma Kurulu tarafından belirlenmekte ve sürekli olarak güncellenmektedir. Çalışmamız kesitsel tanımlayıcı bir araştırma olup, bu çalışmaya toplam 410 aile hekimi ve aile sağlığı çalışanı dahil edildi. Mayıs-Haziran 2019'da aralarında çalışma katılımcılarının da yer aldığı aile hekimleri ve aile sağlığı çalışanlarına 18 grup halinde aşılar, aşı tereddütleri, iletişim ve danışmanlık konularında interaktif bir eğitim toplantısı düzenlendi. Katılımcılara eğitim sunumundan önce 24 başlıktan oluşan bir anket formu uygulandı. Katılımcıların bazı sorulara verdikleri yanıtlara göre gruplar arası karşılaştırmalar analiz edildiğinde, aşı tereddütü olan ebeveynlerle iletişim düzeylerini yansıtan bilgi, tutum ve davranış puan ortalamaları daha iyi olan grubun %57.1'inin, ortalaması kötü olan grubun ise %43.6'sının aşılar ve aşuların özellikleri konusunda eğitim aldığı belirlendi ve gruplar arasındaki farkın istatistiksel olarak anlamlı düzeyde olduğu bulundu ($p=0.008$). Aşığı reddeden ebeveynler en çok Kızamık-Kabakulak-Kızamıkçık (*measles-mumps-rubella*, MMR) aşısı konusunda tereddüt gösteriyordu (%87.7). Sağlık profesyonelleri dünyanın her yerinde verdikleri danışmanlık ile sağlık hizmetlerinin sunumunda ve ailelerin aşı konusunda karar vermesinde çok önemli bir rol oynamaktadır. Aşı tereddütünü azaltmak için sağlık çalışanlarına yönelik aşı konusunda sürekli eğitim faaliyetleri, toplumsal eğitime yönelik eğitim materyallerinin oluşturulması, kitle iletişim araçlarının kullanımı ve yasal düzenlemeler gibi alanlarda çalışmalar yürütülebilir.

Anahtar Kelimeler: Aşılama, Aşı tereddütü, İletişim, Sağlık profesyonelleri, Toplum eğitimi.

Introduction

Vaccination is one of the most effective and inexpensive public health interventions for preventing morbidity and mortality from infectious diseases, second only to the use of clean water and regular sewage systems [1]. Vaccines have saved more lives than any other health development in the 20th century. No other invention, including antibiotics, has reduced mortality rates to this extent [2]. One of the most cost-effective programs to reduce infant/child morbidity and mortality is to vaccinate children against common vaccine-preventable diseases [3]. Vaccines have saved the lives and prevented the disability of hundreds of millions of children and are one of the most effective methods of preventing infectious diseases and their complications [4]. While vaccine-preventable diseases have almost been eradicated in the world, some diseases have started to be seen again due to vaccine instability or refusal, which has increased rapidly especially in recent years [4-7]. This situation poses a serious risk not only individually but also socially, especially in terms of losing the gains achieved in terms of child health. Many diseases, including polio, have the potential to cause epidemics [8]. On the other hand, they also bring serious health costs [4,9]. Vaccines can only fully prevent a disease through

collective (herd) immunity [4,10]. Increased immunization rates significantly reduce the risk of disease [4,9,10]. Even if the individual is not vaccinated, the risk of infectious disease is very low due to high social immunity [1,4].

The 1989 United Nations Convention on the Rights of the Child recognizes immunization as a fundamental human right [11]. In 2012, the World Health Organization (WHO) established a group called the Vaccine Hesitancy Working Group to investigate vaccine refusal [12]. According to the report prepared by WHO and the United Nations Children's Fund (UNICEF) as a result of the work of this group, vaccine hesitancy and vaccine refusal are defined differently [13]. Vaccine hesitancy is the delay in accepting a vaccine or the refusal of a vaccine even though it has been administered and is related to one or more vaccines [14]. Vaccine refusal is the refusal to receive all vaccines with the will to refuse [13,15]. Following the increasing success of vaccines, concerns about real or perceived side effects of vaccines have developed [16]. These concerns can often lead to hesitancy of vaccines [16,17]. There are many determinants of vaccine hesitancy/ambivalence and one of the most important ones is the attitude and communication of healthcare professionals. Studies have shown that good communication and trust between

healthcare professionals and vaccinees and/or their parents is one of the most effective ways to overcome vaccine hesitancy [18,19]. Those who are hesitant about vaccination go to health institutions they trust and make decisions based on the recommendations of health professionals [18,19]. Clinicians should be able to counsel families with up-to-date and reliable information to overcome vaccine hesitancy and support their efforts to adopt vaccines [20].

Türkiye is one of the countries that has managed to achieve a significant reduction in the incidence of vaccine-preventable diseases by increasing immunization rates [21,22]. Especially with the introduction of the Family Medicine system in Türkiye in 2010, it is thought that vaccination services have improved and that the vaccination status of infants and children in the population for which family physicians and family health workers are responsible is better recorded and monitored [21]. The current childhood vaccination schedule of The Ministry of Health of the Republic of Türkiye includes 13 different antigens and all vaccines are administered free of charge [23]. Childhood vaccines are administered in all Family Health Centers and other health institutions that offer vaccine outpatient clinics after informing families. The Ministry of Health has established a web page (<https://asi.saglik.gov.tr/>) to provide accurate and healthy information on vaccination and to raise public awareness.

This study was planned to evaluate the level of knowledge and attitudes of family physicians and family health workers serving in Family Health Centers in Ankara during regular training meetings.

Material and Method

Research permission was obtained from the Republic of Türkiye Ministry of Health, General Directorate of Public Health (Department of Vaccine Preventable Diseases) on 04/04/2019 with the barcode number 90673021. Permission to publish the article was obtained from Ankara Provincial Directorate of Health, Department of Public Health on 05/09/2023 with the barcode number 223701674. The study was conducted in accordance with the Declaration of Helsinki.

Our study is a cross-sectional descriptive study. The population of the study consisted of 3,119 family health center staff (family physicians and family health workers) serving in Family Health Centers (FHCs) in Ankara. The sample size was calculated as 342 with unknown frequency (50%), 95% confidence interval and 1.0 design effect. Considering the possibility of non-response and missing answers, a 20% oversample was selected. 410 people were targeted to be reached. The sampling method was done by stratification and weighting in 25 districts of Ankara.

Family physicians and family health workers included in this cross-sectional-descriptive study were given an interactive training meeting in 18 groups in May-June 2019, primarily on vaccines, vaccine hesitation, communication and counseling, and a questionnaire form consisting of 24 topics prepared for the purpose of "Assessing the Level of Knowledge and Attitude Towards Communicating with Parents Who Hesitate/Refuse to Vaccinate Their Children" was applied before the training presentation. In the questionnaire created by the researchers; there are 22 questions in 5-point Likert type including knowledge, attitude, and behavior propositions. The reliability of this questionnaire was tested, and Cronbach's alpha value was calculated as 0.79. For each proposition, the answers are scored from 1 to 5. Here, positive attitude, behavior or correct knowledge answers were calculated as higher scores. Then, by averaging the scores obtained from the survey questions, the level of knowledge, attitude and behavior was determined as "inadequate" for averages from 1 to 4 (not including 4), and the level of knowledge, attitude and behavior was determined as "good" for averages from 4 to 5 including 4.

Inter-group comparisons were made between the groups with "inadequate" and "good" survey averages determined as the outcome variable and independent variables. The four-level education level groups were combined and compared as two groups: high school and above high school. Similarly, occupational groups were compared as physicians and other occupational groups. The data were transferred to the database created in the SPSS Version 22.0 statistical program and analytical evaluations were made.

Results

A total of 410 family physicians and family health workers were included in the study. Of the 404 participants completed the questionnaires appropriately, 350 (86.6%) were women and 54 (13.4%) were men, and the average age was 44.22±8.40 (Table 1).

Considering the occupational groups, 41.5% (167 people) were midwives, 32.6% (131 people) were nurses and 22.1% (89 people) were doctors. While 41.1% (166 people) of the participants were in the group with "inadequate" survey average, 58.9% (238 people) were in the group with "good" survey average. When a comparison

was made between the groups according to their occupations, 28.3% of the group with a good average was physicians, while 13.3% of the group with an inadequate average was physicians, and the difference between the groups was found to be statistically significant (p<0.001) (Table 1).

It was found that 57.1% of the group with a good average received education about vaccines and their properties, while 43.6% of the group with a poor average received education about vaccines and their properties, and the difference was statistically significant (p=0.008). Other independent variables and comparisons between groups are given in Table 2.

Table 1. Comparison of knowledge-attitude-behavior score groups according to some socio-demographic characteristics.*

| | | Total | Inadequate | Good | p ¹ |
|------------------------------|---|------------|------------|------------|----------------|
| Age, mean±standard deviation | | 44.22±8.40 | 43.93±7.81 | 44.41±8.79 | 0.574 |
| Gender | Female, n (%) | 350 (86.6) | 151 (91.0) | 199 (83.6) | 0.047 |
| | Male, n (%) | 54 (13.4) | 15 (9.0) | 39 (16.4) | |
| Education status | High school, n (%) | 36 (8.9) | 12 (7.2) | 24 (10.1) | 0.409 |
| | University and above, n (%) | 367 (91.1) | 154 (92.8) | 213 (89.9) | |
| Profession | Physicians, n (%) | 89 (22.1) | 22 (13.3) | 67 (28.3) | <0.001 |
| | Midwives, nurses, and other health professionals, n (%) | 313 (77.9) | 143 (86.7) | 170 (71.7) | |

*Column percentages are given. ¹Pearson chi-square.

Table 2. Comparison of knowledge-attitude-behavior score groups according to participants' answers to some questions.*

| | | Total | Inadequate | Good | p ¹ |
|--|----------------------|------------|------------|------------|----------------|
| Have you received training on vaccines and their properties? | Did not | 192 (48.5) | 93 (56.4) | 99 (42.9) | 0.008 |
| | Received | 204 (51.5) | 72 (43.6) | 132 (57.1) | |
| Do you think your knowledge about vaccines and their properties is sufficient? | Yes | 362 (90.7) | 145 (88.4) | 217 (92.3) | 0.248 |
| | No | 37 (9.3) | 19 (11.6) | 18 (7.7) | |
| Have you had a negative experience with vaccination during your professional life? | Yes | 37 (12.3) | 14 (11.4) | 23 (13.0) | 0.811 |
| | No | 263 (87.7) | 109 (88.6) | 154 (87.0) | |
| Who/who mostly makes the decision not to vaccinate the baby/child? | Mother | 91 (23.6) | 36 (22.6) | 55 (24.3) | 0.951 |
| | Father | 28 (7.3) | 12 (7.5) | 16 (7.1) | |
| | Mother and father | 260 (67.5) | 109 (68.6) | 151 (66.8) | |
| | Other family members | 6 (1.6) | 2 (1.3) | 4 (1.8) | |
| Does the family physician you work with provide counseling on childhood vaccines and their possible side effects to parents who are hesitant or unwilling to vaccinate their children? | Yes | 336 (85.5) | 133 (81.1) | 203 (88.6) | 0.101 |
| | Partially | 41 (10.4) | 21 (12.8) | 20 (8.7) | |
| | No | 13 (3.3) | 9 (5.5) | 4 (1.7) | |
| | Do not remember | 3 (0.8) | 1 (0.6) | 2 (0.9) | |
| Do you provide information about childhood vaccinations during pregnancy follow-up? | Yes | 272 (70.6) | 106 (66.7) | 166 (73.5) | 0.096 |
| | Partially | 96 (24.9) | 42 (26.4) | 54 (23.9) | |
| | No | 17 (4.4) | 11 (6.9) | 6 (2.7) | |
| Did any of the parents who were hesitant to vaccinate their children accept to vaccinate their children with the counseling you provided? | No | 119 (33.3) | 54 (36.7) | 65 (31.0) | 0.254 |
| | Yes | 238 (66.7) | 93 (63.3) | 145 (69.0) | |

*Column percentages are given. ¹Pearson chi-square.

When family health workers were asked which vaccines parents with vaccine refusal were most hesitant about, Measles-Mumps-Rubella (MMR) vaccine ranked first with 87.7%, followed by Oral Polio Vaccine (OPV) with %86.8, Diphtheria, Tetanus, Acellular Pertussis, Polio, and *Haemophilus influenzae type b* (DTaP-IPV-Hib) with 84.6%; and all vaccines was 76.8%. Hesitancy regarding vaccines is given in Figure 1.

When the employees were asked about the reasons for hesitation of parents who hesitate to vaccinate their children, "thinking that vaccines are not safe" ranked first with 75.9%, while

"health workers not informing them enough and not allocating enough time" ranked last with 1.3%. Table 3 summarizes the other reasons for hesitation of parents according to the statements of the employees.

Table 4 summarizes the distribution of the correct answers given by the employees to the multiple-choice questions related to communication. Employees gave the highest correct answer to the question about the benefits of effective listening (99%), while the lowest correct answer was given to the question about empathic response (63.3%).

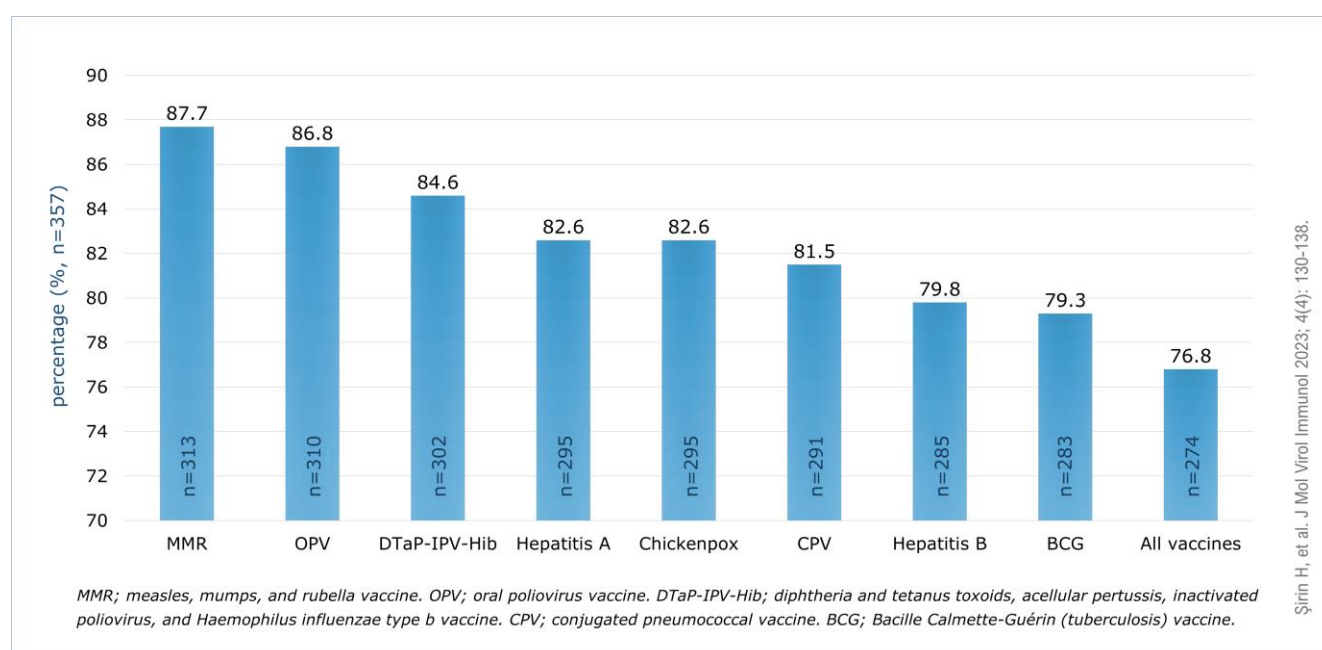


Figure 1. Vaccines that parent with vaccine hesitancy do not want to be administered to their children.

Table 3. Main reasons for parents who feel hesitant about vaccinating their children (n=394).

| | n (%) |
|--|------------|
| Thinking that vaccines are not safe | 299 (75.9) |
| Thinking that vaccines contain substances objectionable in terms of religion (pork products, etc.) | 234 (59.4) |
| Vaccines are produced in foreign countries | 228 (57.9) |
| Following anti-vaccine groups on social media | 204 (51.8) |
| Negative news in the press | 175 (44.4) |
| Negative experiences after vaccination in their close environment | 84 (21.3) |
| Thinking that vaccines are useless | 78 (19.8) |
| The child has a disease that prevents vaccination | 29 (7.4) |
| Other | 26 (6.6) |
| Health personnel do not provide adequate information about vaccination and do not allocate enough time | 5 (1.3) |

Table 4. Number and percentage distribution of participants' correct answers to the information questions about communication.

| | n (%) |
|---|------------|
| Which of the following is not one of the benefits of "effective listening"? (n=397) | 393 (99.0) |
| Which of the following should not be done during vaccination? (n=394) | 389 (98.7) |
| Which of the following is not one of the recommended behaviors in "non-verbal communication"? (n=396) | 388 (98.0) |
| Which of the following is not one of the recommended behaviors in "verbal communication"? (n=391) | 358 (91.6) |
| Which of the following is one of the recommended behaviors in "nonverbal communication"? (n=396) | 327 (82.6) |
| How should feedback be given to an applicant? (n=373) | 295 (79.1) |
| Which of the following cannot be said about the I-language technique? (n=366) | 282 (77.0) |
| Which of the following is a correct approach in terms of "empathic response"? (n=395) | 250 (63.3) |

Discussion

Health workers play a key role in ensuring that infants/children whose families are vaccine hesitant are vaccinated [19,24,25]. In the literature, it is recommended that health professionals should provide counseling supported by up-to-date and reliable sources and organize training meetings on effective communication while reminding families about the vaccination schedule (appointment) to reduce vaccine ambivalence and ensure that they adopt positive approaches [25–27]. In Türkiye, at family health centers, family physicians and family health workers monitor infant, child, and individual vaccinations [21,25,28]. Families who do not keep their vaccination appointments are contacted and invited to the family health center. Families who are hesitant about vaccination go to health institutions they trust and make decisions in line with the recommendations of health professionals.

Healthcare professionals are the primary influencer and source of information about vaccines for parents and caregivers, so receiving immunization training and having competent knowledge for vaccines and immunization practices is a critical determinant of achieving and maintaining vaccination goals [25,29]. In our study, when a comparison was made between the groups according to the answers given by the participants to some questions, 57.1% of the group with a good average and 43.6% of the group with an inadequate average received training on vaccines and their properties, and the

difference was found to be statistically significant ($p=0.008$).

Children who are under-vaccinated for reasons other than medical reasons are at high risk of contracting and transmitting vaccine-preventable diseases. According to the results of a retrospective cohort study conducted between 1985 and 1992, under-vaccinated children had a 35-fold increased risk of contracting measles compared to fully vaccinated children [30]. Another retrospective cohort study found that unvaccinated children were more likely to contract measles (OR=22.2; 95% CI=15.9-31.1) and pertussis (OR=5.9; 95% CI=4.2-8.2) than vaccinated children [31].

In a study conducted in Türkiye revealed that the vaccine refusal cases continue to increase; it was determined that there were 8,977 cases of vaccine refusal (refusal rate 3.5 per thousand) in 2016, and 14,779 cases (refusal rate 5.9 per thousand) in 2017 ($p<0.001$) [25]. Fears about adverse effects have been reported as the most common underlying reason for vaccine refusal in the same study [25]. For example, MMR vaccine may be rejected by parents considering it to have poor effectiveness and adverse effects [15,32]. In our study, when family health workers were asked which vaccines parents who hesitated about vaccination were most hesitant about, MMR vaccine ranked first with 87.7%, followed by OPV (86.8%), and DTaP-IPV-Hib (84.6%) and all vaccines was 76.8%. In response to the success of measles vaccinations, it is estimated that a total of 20.4 million deaths were prevented

globally between 2000 and 2016 compared to the no vaccination scenario [33]. The assumption that there is an association between certain childhood vaccines and autism is one of the most debated reasons for anti-vaccination in the literature [32,34]. Although there are numerous scientific studies showing that there is no causal relationship between these two conditions, some anti-vaccine groups maintain such a suspicion, especially for the MMR vaccine [35,36]. In Yokohama, Japan, MMR vaccination declined dramatically in birth cohorts between 1988 and 1992 and was completely discontinued in 1993. However, the cumulative incidence of autism under seven years of age increased significantly in the 1988-1996 birth cohorts, with the highest increase observed in the birth cohort beginning in 1993 [36]. This phenomenon reveals the importance of misinformation in opposition to vaccination.

In a study conducted by Özceylan et al. as reasons why the vaccine is not beneficial stated by participants; 43.8% said that they did not trust vaccine companies, 23.8% said that they heard from the internet that vaccines were harmful, 5.38% said that they did not trust healthcare professionals, and 10.8% said that they did not know [5]. In a study by Erdoğan et al. the most common reasons for vaccine refusal were found to be fear of disease caused by the vaccine with 53.7% (n=298), religious reasons with 32.3% (n=179), lack of belief in protection with 9.9% (n=55), and fear of infertility at 4.1% (n=23) [21]. Logistic regression analysis was applied to determine the factors affecting the power to recommend a family physician. The results showed that being over 41 years of age, having self-efficacy, and believing in the benefit of vaccination contributed positively to the power to recommend vaccination [21].

In a study by Üzüm et al. [37], 88.7% of the participant parents were mothers and 84.1% of them had a vaccination card. It was observed that being an only child positively affected having a vaccination card, receiving regular vaccinations, and knowing and receiving non-routine vaccinations. It was found that 84.1% (n=254) of the parents found vaccination necessary. It was observed that parents mostly knew the measles

vaccine, while 91 (30.1%) parents did not know the name of any vaccine. It was observed that as the level of maternal education increased, the rates of being aware of vaccines and having them administered increased. In the mentioned study, the effects of economic and educational level and having many children on vaccination were observed, and it was concluded that parents preferred to learn vaccination information from health centers, therefore it is important to provide more information on immunization in health institutions [37].

In this context, it is recommended that health professionals listen respectfully to families' objections, provide them with accurate information, and spend time on family education to dispel misconceptions about vaccines [38,39]. Dubé et al. noted that the broad impact of the media and health workers' level of knowledge and communication should be considered in developing different tools and strategies to reduce vaccine hesitancy and improve immunization efforts [40]. As Larson et al. emphasize, more emphasis should be placed on listening to concerns to understand public perceptions [41].

Conclusion

Vaccine instability is a complex and rapidly changing global problem that requires continuous monitoring. Even small declines in childhood immunizations due to vaccine instability can cause larger public health and economic problems when unvaccinated infants, adolescents, and adults are considered. Over time, however, vaccines have become a victim of their own success, because once common childhood infectious diseases have been effectively controlled by vaccines, parents no longer feel fear of these diseases. The concern or fear has shifted to vaccine reactions or the possibility of side effects. All healthcare providers, especially family physicians, who administer vaccines should try to keep up to date with current developments regarding recommended vaccines and understand why these vaccines are recommended. Providing this information to families so that they can make the best decision will help them access the right information. It is thought that regular face-to-face or on-line training programs should be organized to increase

the level of education of healthcare professionals, and that they should be informed about the benefits and possible effects of vaccines as well as

production, storage, distribution, and administration processes within the scope of training topics.

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