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Determination of Early Side Effects After Covid-19 Vaccinations

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Abstract

Objectives: The first phase of the COVID-19 vaccine was launched in Turkey in January 2021 and was intended primarily for healthcare workers. Vaccine side effects play significant role in building public confidence in vaccination. This study aims to determine the early-stage vaccine side effects in healthcare workers who have been given the COVID-19 vaccine.

Methods: The research has a descriptive cross-sectional type of design. The data were collected face-to-face with the questionnaire form created by the researchers, which investigated the sociodemographic characteristics and vaccine complications of the participants.

Results: The sample of the study consisted of 321 medical personnel (%55.6 female, %79.8 under 40 years, %67.1 nurses, %15.2 physicians, and %17.4 laboratory workers) who received the Covid-19 vaccine in Turkey and voluntarily agreed to participate in the study. The most common side effects associated with vaccination were as follows: pain (%46.3 Sinovac, %55.5 Pfizer- biotech), heat increase (%32.8 Sinovac, %30.7 Pfizer- biotech), whole-body aches (%55.2 Sinovac, %58.7 Pfizer- biotech) and injection site redness (%28.4 Sinovac, %26.0 Pfizer- biotech).

Conclusions: The benefits of the Covid-19 vaccine preponderate its identified side effects of it. Most of the side effects reported in this study were consistent with Pfizer-Biotech.

Keywords: Covid-19, Vaccination, Side effect, Healthcare Professional

Covid-19 Aşı Sonrası Erken Dönem Gelişen Yan Etkilerin Belirlenmesi

ÖZET

Amaç: Türkiye'de COVID-19 aşısı Ocak 2021'de öncelikli olarak sağlık çalışanlarına uygulandı. Aşı yan etkileri, insanların aşıya olan güvenini oluşturmada önemli bir rol oynamaktadır. Bu çalışma, COVID-19 aşısı yapılan sağlık çalışanlarında erken evre aşı yan etkilerini belirlemeyi amaçlamaktadır.

Yöntem: Bu araştırma tanımlayıcı-kesitsel bir çalışmadır. Veriler, araştırmacılar tarafından oluşturulan, sağlık personelinin sosyodemografik özellikleri ve aşı komplikasyonları hakkındaki bilgilerini sorgulayan anket formu ile yüz yüze toplanmıştır.

Bulgular: Araştırmanın örneklemini Türkiye'de Covid-19 aşısı olan ve çalışmaya gönüllü olarak katılmayı kabul eden 321 sağlık personeli (%55.6 kadın, %79.8 40 yaş altı, %67.1 hemşire, %15.2 hekim ve %17.4 laboratuvar çalışanı) oluşturmuştur. Aşılama ile ilişkili en sık görülen yan etkiler; ağrı (%46.3 sinovac, %55,5 pfizer-biotech), ısı artışı (%32.8 sinovac, %30.7 pfizer-biotech), tüm vücut ağrıları (%55.2 sinovac, %58.7 pfizer-biotech) ve enjeksiyon bölgesinde kızarıklık (%28.4 sinovac, %26.0 pfizer-biotech)'dır.

Sonuç: Covid-19 aşısının yararları, tanımlanmış yan etkilerinden daha ağır basmaktadır. Bu çalışmada bildirilen yan etkilerin çoğu Pfizer-Biotech ile uyumluydu.

Anahtar Kelimeler: COVID-19, Aşı, Yan etki, Sağlık Çalışanı

Covid-19 is the most important health problem of the 21st century. Covid-19 is transmitted from person to person through the air, causing a respiratory infection that can progress to fatal complications (1). Studies have documented a large number of cases of COVID-19 among medical personnel working in hospitals, nursing homes and nursing homes (2). The high and rapid contagiousness of the virus, the lack of treatments that can improve the prognosis of the disease, and the negative impact on the health systems of countries show the importance of developing an effective and reliable vaccine against the disease. The vaccine is aimed to reduce the severity of the disease, the transmission of the virus, and the burden of the disease. In addition, World Health Organization experts pointed out that 60-70% immunity is required to end the pandemic with vaccines. The death of thousands of people a day and the social and economic stagnation of life from time to time have accelerated vaccination studies (1-3).

Although COVID-19 vaccines have been approved as emergency vaccines within a short period of time, concerns about the safety and effectiveness of vaccines in the general population remain. There have been several studies attributing vaccine hesitancy among young adults to trust in vaccine, perceived side effects and lower risk perception of the disease (4, 5).

Covid-19 vaccine trials are progressing rapidly around the world, but large disparities between countries are observed. According to Our World in Data, which compiles vaccine statistics daily, approximately 50 percent of the world's population has received at least one dose of vaccine. While in Europe and North America every second person has the opportunity to be vaccinated, this number is quite low in Africa. Worldwide, the number of doses made so far, including the second dose of vaccine, has exceeded 7 billion. For example, vaccine application in Turkey started on January 14th and the amount of first, second, and third doses of vaccine administered as part of the fight against Covid-19 exceeded 114 million as of October 2021 (6).

Although vaccination increases rapidly around the world, it has been reported that mild side effects such as pain at the injection site, redness, swelling, headache, fatigue, muscle/joint pain, fever, chills, vomiting, diarrhea, and rarely allergic side effects may occur after vaccination (7). Local and systemic side effects that can be seen after vaccination may occur immediately after vaccination or a few days later. While the side effects may depend on the content of the vaccine and environmental factors, the cause cannot be determined exactly. The allergic side effects of vaccines are rare but can be fatal. Although the risk of anaphylaxis is low with vaccines, nurses and patients should be prepared for appropriate interventions by monitoring possible side effects (8). Studies have reported that healthcare professionals have hesitations regarding vaccinations (9). For this, it is important to determine the side effects that develop in individuals who are administered the Covid-19 vaccine and the factors that are effective in this process. This study aims to determine the early period vaccine side effects in individuals who have been vaccinated against Covid-19.

METHODS AND MATERIALS

Study Design

This research is a descriptive study. The aim is to examine early side effects after Covid-19 vaccinations administered in a hospital in Turkey. In Turkey, the vaccination program started with the vaccination of health workers first in February 2021. There are two types of vaccinations, Sinovac and Pfizer-Biotech, and which vaccine will be given is based on the choice of people.

Participants

Study participants were selected from hospital staff who received the Covid-19 vaccine between February and March 2021 the Gülhane Training and Research Hospital in Ankara, Turkey. They were 321 participants, nearly 25 percent of all hospital staff. 80% of participants chose Pfizer- Biotech vaccine and 20% of participants chose the Sinovac vaccine. Questionnaires were administered to healthcare workers after the first dose of vaccine was administered.

Data Collections

The data were collected face-to-face with the questionnaire form created by the researchers. In the study, data were collected with the socio-demographic characteristics form and vaccine-related reactions form. In the Socio-demographic characteristics form, there are a total of 7 questions evaluating the age, gender, educational status, profession, and health status of individuals. Age

(categorized to 20-29, 30–39, and <40 years), gender, profession (nurse, doctor or laboratory worker) and participant department. In the form of vaccine-related reactions, there are 17 questions in which local and systemic side effects that may develop due to the vaccine are questioned. Reaction development time after vaccination and Covid-19 vaccine side effects; whether possible side effects (yes–no).

Analyses

The data of the study were analyzed in the IBM SPSS Statistics 23.0 package program. The categorical variables were given as numbers and percentages. For comparison, a t-test was run to examine the results of the two groups (Sinovac and Pfizer- Biotech) in this study.

Ethical Approval

The written permission of the ethics committee of Health Sciences University Hamidiye Scientific Research (numbered 16.03.2021-1112) and the Gülhane Training and Research Hospital Medical Specialization Education Board with the decision number E-50687469-799 allowed the study to be carried out. Written informed consent was obtained from the healthcare professionals participating in the study after the required information about the study was provided.

RESULTS

A total of 321 healthcare professionals filled out the questionnaire. The characteristics of the participants are given in Table 1. Out of 321 respondents, 179 (55.6%) were females and 142 (44.4%) were males. The majority of them (216, 67.1%) were nurses followed by laboratory workers 56 (17.4%), and physicians 49 (15.2%). Table 2 shows the side effect development time after two types of vaccinations. According to the results, most of the participants stated no serious adverse events. Comparing the side effects reported by the manufacturer with those reported by the participants of this study, similar results were noted. The results showed that there are some local and systematic side effects. The most common side effects are injection site pain, heat increase, whole body aches, and redness. Less common side effects are ınjection site swelling, itching, nettle rash, fever, headache. Rare side effects included injection site abscess, dysfunction, dizziness, lack of appetite, vomit, and anaphylaxis (Table 3).

Table 1. Characteristics of the Participants

Age	N	%
20-29	101	32.4
30-39	152	47.4
40 and above	68	21.2
Gender		
Female	179	55.6
Male	142	44.4
Job		
Nurse	216	67.1
Physician	49	15.2
Lab Worker	56	17.4
Department		
Internal Diseases Clinics	87	27
Surgical Clinics	73	22.7
Emergency Service	61	18.9
Intensive Care Units	74	23
Others	26	8.4

Table 2. Reaction Development Time after Vaccination

Type of vaccine	In the first 15 min.	In the first 30 min.	Within 24 hours	Within 48 hours	Within 72 hours	Other	p
Sinovac	2	2	4	-	-	59	0.69
Pfizer-Biotech	12	11	23	-	-	208	

DISCUSSION

In this study, we aimed to examine the side effects of the first dose of the Covid vaccine. In our study, participants mentioned some side effects, especially within 24 hours. After vaccination, anaphylaxis developed in the first 24 hours in 25 people who had Pfizer- Biotech and 3 people who had Sinovac. Severe side effects were observed in a nurse who received the Pfizer- Biotech vaccine was immediately intervened. The symptoms observed in the other participants were sudden onset of nettle rash, vomiting-diarrhea, and shortness of breath, and the side effects were treated with medication. These side effects were reported. The side effects developed in the other participants resolved spontaneously without any intervention. In our study, the majority of the side effects were injection site-related effects. The most common local adverse side effect was injection site pain, observed in 172 of 321 participants. Also, there are no significant differences in results between the two types of vaccines based on side effect development.

Table 3. Reactions by type of Vaccine

	Answer	Sinovac		Pfizer-Biotech		p
Local Reactions		**n**	**%**	**n**	**%**	
Injection Site Pain	**Yes**	31	46.3	141	55.5	0.18
	No	36	53.7	113	44.5	
Injection Site Swelling	**Yes**	12	17.9	33	12.9	0.3
	No	55	82.1	221	87.1	
Injection Site Heat Increase	**Yes**	22	32.8	78	30.7	0.74
	No	45	67.2	176	69.3	
Injection Site Redness	**Yes**	19	28.4	66	26.0	0.70
	No	48	71.6	188	74.0	
Injection Site Itching	**Yes**	10	14.9	26	10.2	0.28
	No	57	85.1	228	89.8	
Injection Site Abscess	**Yes**	4	6.0	5	2.0	0.1
	No	63	95.5	249	95.4	
Disfunction	**Yes**	3	4.5	12	4.7	0.62
	No	64	95.5	242	95.3	
Other	**Yes**	8	11.9	24	9.4	0.55
	No	59	88.1	230	90.6	
Systematic Reactions		**n**	**%**	**n**	**%**	
Urticaria / Skin Rash	**Yes**	13	19.4	54	21.3	0.74
	No	54	80.6	200	78.7	
Fever	**Yes**	17	25.4	54	21.3	0.47
	No	50	74.6	200	78.7	
Headache	**Yes**	10	14.9	39	15.4	0.93
	No	57	85.1	215	84.6	
Dizziness	**Yes**	1	1.5	5	2.0	0.63
	No	66	64.1	249	62.6	
Whole body aches	**Yes**	37	55.2	149	58.7	0.61
	No	30	44.8	105	41.3	
Lack of Appetite	**Yes**	1	1.5	12	4.7	0.21
	No	66	98.5	242	95.3	
Vomit	**Yes**	3	4.5	14	5.5	0.51
	No	64	95.5	240	94.5	
Anaphylaxis	**Yes**	3	4.5	25	9.8	0.17
	No	64	95.5	229	90.2	
Other	**Yes**	3	4.5	25	9.8	0.17
	No	64	95.5	229	90.2	

In our study, the incidence of serious adverse events was found to be low. Mild and transient side effects related to vaccination have been reported. Our results are also consistent with other studies among healthcare professionals. For example, a recent study reported majority of the side effects were mild side effects (55.9%) which included myalgia, malaise and feverish feeling and injection site-related side effects (25.2%) (10). In another study reported from South India, health care workers had minor adverse effects following immunization after the first dose (11). Another study found the rate of experiencing pain was 31.7% among those who were administered the inactive Covid-19 vaccine (12). Similar to these studies, Polack et al. reported that the most common side effect was pain at the injection site (13).

Concerns about the COVID-19 vaccine often arise from insufficient knowledge of a new vaccine and potential long-term side effects. People who have doubts about vaccines may refuse vaccines, delay vaccination, take some vaccines but refuse others (14). Healthcare workers can have a strong influence on vaccine hesitancy in the general population (15). Studies have found that vaccine hesitancy is higher among younger women (16 17). According to Kadoya et al. reported that middle-aged people had less doubts about vaccination than young and old people, and that women had more doubts about vaccination than men (18).

The sex of individuals also plays an important part in vaccine side effects. A study reported that the incidence rate of pain at the injection site of women was higher (19). Similarly, in a study in which two different vaccines were administered, it was reported that more reactions were seen in women (20). The results of these studies are similar to the literature that pain was experienced more by women.

One of the most common systemic side effects experienced after Covid-19 vaccination is high fever (21). This might be due to the dose of the medication increased (22). Heat increase might be caused by the presence of certain diseases, such as infection, chronic diseases. Another study showed that individuals with chronic illness experienced more vaccine side effects but no association with medication (23). The most important reason for vaccine hesitancy is the safety and possible side effects of the Covid vaccine (24). This study was conducted by healthcare professionals who have a higher level of knowledge about vaccines than the general public, which may help reduce public doubt about vaccination. Our study has several important public health implications. First, identifying the determinants associated with Covid-19 vaccination intent can help improve the success of future vaccination campaigns. Second, a safe and effective vaccine can be seen as a measure to help control the Covid-19 pandemic.

CONCLUSIONS

In clinical studies and current vaccine applications, serious side effects of Covid-19 vaccines have not been encountered so far. Side effects after vaccination are often mild. Healthcare workers are a particularly important risk group for whom effective vaccination protection is required due to the risk of infection at work. One of the frequently cited reasons for vaccine hesitations among these groups is concern about side effects. Vaccination of the healthcare worker should help clear up vaccine hesitancy among the population. When the risks of exposure and severe illness and the negative impact of the disease on the functioning of social life were evaluated, the side effects observed after vaccination showed an acceptable safety profile.

Limitations

The limitation of the study in terms of generalization is that it was conducted in a training and research hospital in the province of Ankara. Research results cannot be generalized to all healthcare professionals.

DECLARATIONS

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Conflict of Interest

All authors declared that there is no conflict of interests with any financial organization regarding the material discussed in the paper.

Contributions

Study design: SA, NYŞ, NYA; data collection and analysis: NYŞ; Manuscript preparation: NYŞ, SA, NYA

Ethical Approval

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