RESEARCH ARTICLE

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Received: 11.08.2021
Acceptance: 30.08.2021
DOI: 10.18521/ktd.981790

Konuralp Medical Journal
e-ISSN1309–3878
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Determining the Side Effects of Covid-19 (Sinovac) Vaccination on Nurses; an Independent Descriptive Study

ABSTRACT

Objective: It is important to protect nurses fighting against the COVID-19 pandemic through vaccination. This study aims to determine the incidence rate of side effects experienced by nurses after their COVID-19 (Sinovac) vaccination and relevant factors.

Methods: This is a descriptive design study. The sample of the study included 355 nurses who received the Sinovac COVID-19 vaccine in Turkey and who agreed to participate in the study. Data were collected using a questionnaire which was written by the researchers and gathered information on the nurses' sociodemographic and professional characteristics, health status, habits, and vaccine complications.

Results: The study included 355 nurses, of which 82.3% were female. Their median age was 35.42±9.67, and their mean BMI was 24.87±4.54. The most common local side effect experienced after the vaccination was pain (54.6%) while the most common systemic effects were fatigue (39.2%) and headache (34.1%). Pain, among local side effects, was significantly higher among male nurses (p= 0.001) and those who worked more than 40 hours a week (p= 0.001). The systemic side effect of fatigue was experienced at a higher rate among nurses who were diagnosed with COVID-19 before their vaccination (p=0.004), those who drank alcohol (p=0.028), and those who worked more than 40 hours a week (p=0.012). The systemic side effect of fever was more common among nurses with chronic conditions (p=0.037).

Conclusions: The most common systemic side effect experienced after the COVID-19 vaccination was reported as fatigue and the most common local side effect was pain. Considering the relevant factors that affected the incidence rates of side effects, it would be suitable to plan the weekly working hours of nurses no longer than 40 hours. It can be recommended to conduct more randomized controlled studies to determine what else weekly working hours affect among nurses.

Keywords: Nurse, COVID-19, Vaccine, Side Effect.

Hemşirelerde Covid-19 Aşısı (Sinovac) Sonrası Görülen Yan Etkilerin Belirlenmesi; Bağımsız Tanımlayıcı Çalışma

ÖZET

Amaç: COVİD 19 pandemisi ile mücadelede hemşirelerin aşı yoluyla bağışıklanarak korunmaları önem arz etmektedir. Çalışmanın amacı, COVİD 19 aşısı (Sinovac) sonrası hemşirelerde yan etki görülme oranları ve ilişkili faktörlerin belirlenmesidir.

Gereç ve Yöntem: Araştırma tanımlayıcı tipte tasarıma sahiptir. Araştırmanın örneklemini Türkiye'de COVİD-19 aşısı yaptıran ve gönüllü olarak çalışmaya katılmayı kabul eden 355 hemşire oluşturmuştur. Veriler, araştırmacılar tarafından oluşturulan ve hemşirelerin sosyo-demografik ve mesleki özellikleri, sağlık durumları, alışkanlıkları ve aşı komplikasyonlarına ilişkin bilgilerini sorgulayan anket formu ile çevirim içi olarak toplanmıştır.

Bulgular: Çalışmaya 355 hemşire katılmıştır. Hemşirelerin %82,3'ü kadındır. Ortanca yaşları 35,42±9,67, BKİ ortalamaları 24,87±4,54'dır. Aşılama sonrası en sık görülen lokal yan etki ağrı (%54,6) ve en sık görülen sistemik etkiler ise yorgunluk (%39,2) ve baş ağrısı (%34,1) olarak bulunmuştur. Lokal yan etkilerden ağrı erkek cinsiyette (p= 0,001) ve haftalık olarak 40 saatin üzerinde çalışan (p= 0,001) hemşirelerde istatiksel olarak anlamlı düzeyde daha yüksek bulunmuştur. Aşılanma öncesi COVİD-19 tanısı alanlarda (p=0,004), alkol kullananlarda (p= 0,028) ve haftalık 40 saatin üzerinde çalışanlarda (p= 0,012), yorgunluk sistemik yan etkisi daha yüksek oranda görülmüştür. Ateş sistemik yan etkisi ise, kronik hastalığı olan hemşirelerde daha çok görülmüştür (p= 0.037).

Sonuç: COVİD 19 aşılaması sonrası en sık görülen sistemik yan etki yorgunluk ve lokal yan etki ise ağrı olarak bildirilmiştir. Yan etkilerin görülme oranlarını etkileyen ilişkili faktörlere bakıldığında hemşirelerin haftalık çalışma saatlerinin 40 saatten fazla olmayacak şekilde planlanması uygun olacaktır. Haftalık çalışma saatlerinin hemşirelerde başka neleri etkiliyor olduğuna dair randomize kontrollü çalışmaların yapılması önerilebilir.

Anahtar Kelimeler: Hemşire, COVİD-19, Aşı, Yan Etki.

INTRODUCTION

The COVID-19 pandemic was firstly reported as a severe acute respiratory syndrome by the World Health Organization (WHO) in January 2020. The strong contagion of the virus caused the disease to spread rapidly among people which quickly turned it into a pandemic (1). According to the WHO reports, there have been 178,202,610 confirmed COVID-19 cases and 3,865,738 deaths as of June 2021 (2). Regarding Turkey, there have been a total of 5,375,593 cases and 49,236 deaths as of June 2021 (3). The need for vaccinations has come into prominence to decrease the mortality and morbidity rates related to infection in the COVID-19 pandemic affecting the world (4). More than 100 vaccines have been developed and gone into use at different phases during the pandemic (5). Pfizer–BioNTech and Sinovac-Coronovac vaccines, which have been authorized for emergency usage, are two of these vaccines which have been used during the pandemic (6). Vaccination of nurses, who are in the riskiest group fighting against the pandemic, is of great importance (3). However, it has been reported that nurses experience hesitations related to the possible side effects of vaccines and that this might negatively affect the vaccination rates (7-9).

The most common local side effect reported in relevant studies is pain while the most common systemic side effects are fever, fatigue, headache, and muscle aches (10, 11). Studies have reported that health professionals have hesitations regarding vaccinations and are more common among female professionals (12). Even though people have different viewpoints regarding different vaccines, nurses are generally willing to be vaccinated against COVID-19 (13).

Nurses are the most numerous group among healthcare professionals (14). Vaccination of nurses for COVID-19 means 1/5 of all healthcare professionals would be vaccinated in Turkey. It is extremely important to increase the vaccination rate in society and to eliminate incorrect information about vaccines with scientific evidence to make people trust in vaccines. Thus, scientifically addressing the complications experienced by nurses after vaccination and relevant factors will enable to obtain valuable results about COVID-19 vaccines. Evaluating the nurses' experiences about the post-vaccination process in Turkey is believed to contribute to the relevant literature. This study aims to determine the incidence rate of side effects experienced by nurses after their COVID-19 (Sinovac) vaccination and relevant factors.

MATERIAL AND METHODS

This was a descriptive design study. The population of the study included nurses who work in Turkey. According to the 2019 data of the Ministry of Health, the number of personnel working in all healthcare institutions at that time was 1,033,767, the number of healthcare professionals was 654,438 and the number of nurses was 198,103 (15). The rate of nurses among healthcare professionals was almost 30% and their rate was 20% among all personnel in the healthcare sector. The number of healthcare personnel was considered as the sample size with a confidence interval of 95% and an error margin of 5%. The sample size was calculated using the Roasoft program and the incidence rate was taken as 198,103 (20%), which was the number of nurses. Thus, the sample size was calculated as 246. This number was increased by 15% in case of absences (16) and the total number was determined as 283. Comparisons were made considering the working units of the participants and correlational significance based on these comparisons was sought. As no specific method was used to determine the sample units, the highest number of mixed participants - that can be reached via online survey regardless of quota distinction - was targeted and 355 people were reached. The online survey method was used in this study as it is advantageous in terms of time and place regarding the participants, is free, and is the safest under pandemic conditions. The informed consent of the participants was obtained with the survey form.

Study questions were determined as follows: Which side effects were experienced by nurses after they were vaccinated for COVID-19? (i) What is the incidence frequency of post-vaccination side effects experienced by vaccinated nurses? (ii).

The inclusion criteria were working as a nurse, accepting to participate in the study by signing the *Informed Voluntary Consent Form* collected beforehand, and getting vaccinated for COVID-19. Those who had immunosuppressive diseases, who had received chemotherapy within one year before the study was conducted, and who had received cortisone therapy were not included in the study.

Data were collected using the data collection form (13, 17, 18) developed by the researchers after a literature review via the online survey method. The form consists of 18 questions about sociodemographic and professional characteristics, health status, habits, medication, and vaccine side effects of the participants.

Dependent variables of the study were age, sex, marital status, weekly working hours, working unit, smoking and alcohol consumption, chronic conditions, regular medication, regular influenza vaccination, daily sleep routine and sleep duration, body mass index, and taking vitamin/nutritional supplements. Independent variables of the study were the state of experienced unwanted side effects after vaccination.

The written permission of the ethics committee of Necmettin Erbakan University Health Sciences Institute (numbered 07.04.2021-9/21) and the Ministry of Health Scientific Research Platform

(Serap Batı-2021-03-26T10 33 36) was obtained for this study. Informed consent of the participants was obtained before the study was conducted. This study was carried out and reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (19).

Statistical Analysis: Raw data obtained in the study were registered, processed, and evaluated into the Statistical Package for Social Sciences (SPSS) 22.0 program at the confidence interval of 95% and significance level of $p<0.05$. Percentage, mean, and standard deviation values were used in the analysis of descriptive data. The Kolmogorov-Smirnov test was used to determine whether the data were normally distributed. The Chi-square test was used for the comparison of categorical data. Regarding the comparisons between the two groups, Student's t-test was used when the parametric conditions were met after the normality analysis. The Mann-Whitney U test was also used when the parametric conditions were not met.

RESULTS

This study included 355 nurses, of whom 82.3% were female. Their median age was 35.42±9.67 (Min:21 Max:56) and their mean BMI was 24.87±4.54.

Table 1. Distribution of nurses by sociodemographic characteristics (N=355)

Variable	Group	n	%
Sex	Female	292	**82.3**
	Male	63	17.7
Age (year)	35.42±9.67 (Min:21 Max:56)		
BMI (kg/m^2)	24.87±4.54 (Min:15.81 Max:53.33)		

Of the nurses, 31.9% had worked as a nurse for more than 5 years while 29.6% had worked as a nurse for more than 20 years. Of them, 23.4% worked in surgical clinics, 18.0% worked in administrative units, and 15.5% worked in family practice/community health centers. The rate of nurses who worked in COVID-19 clinics and COVID-19 intensive care units were 6.2% and 2.3%. Of the nurses, 51.0% stated to work for 40 hours a week (Table 2).

Table 2. Distribution of results on the professional characteristics of nurses (N=355)

Variable	Group	n	%
Professional Time as a Nurse	Less than 1 year	45	12.7
	1-5 years	68	19.2
	6-10 years	52	14.6
	11-15 years	49	13.8
	16-20 years	36	10.1
	21-25 years	43	12.1
	More than 25 years	62	17.5
Working Unit*	Surgical Clinics	83	23.4
	Administrative Units/District Health Departments	64	18.0
	Internal Disease Clinics	55	15.5
	Family Practice/Community Health Centers	45	12.7
	Intensive Care Units	39	11.0
	Emergency Service/112	39	11.0
	COVID-19 Clinic	22	6.2
	COVID-19 Intensive Care Unit	8	2.3
Weekly Working Hours	40 hours	181	51.0
	More than 40 hours	174	49.0

*Listed from the highest to the lowest.

Of the nurses, 19.4% had a chronic condition, and 20.6% regularly took medication. Considering the chronic conditions participants had, 4.22% had thyroid, 3.94% had chronic respiratory diseases, 3.66% had diabetes, and 3.09% had high blood pressure. The highest rate of regularly used medication was thyroid drugs with 6.76%.

Of the nurses, 11.5% got vaccinated for influenza every year, and 6.19% regularly took vitamin D supplements.

Of them, 56.1% slept for less than 7 hours a day while 42.8% slept 7 to 9 hours a day. The rate of those who slept longer than 9 hours a day was 1.1%. Of them, 44.2% drank 1-2 liters of water a day whereas 25.9% drank 2-3 liters of water a day Among the nurses, the rate of being diagnosed with COVID-19 before vaccination was 34.1%. Of the nurses, 54.6% stated that they felt pain around the injection site for at least a week after the vaccination. The side effects experienced were stiffness around the injection site (14.6%), muscle weakness (14.1%), itching (11.59%), redness (10.7%), and swelling (10.4%) (Table 3)

Table 3. Undesirable Side Effects after Vaccination (Local)

Side effects	% Percent
Pain	54.6%
Stiffness	14.6%
Muscle Weakness	14.1%
Itchiness	11.5%
Redness	10.7%
Swelling	10.4%

The factors that affected the local side effects experienced on the injection site after the COVID-19 vaccination are given in table 4. The rate of experiencing muscle pain around the injection site was higher in men than women (p=0.001) and those who worked more than 40 hours a week to those who worked less than 40 hours a week (p=0.001). This rate was also lower among those who took regular medication to those who did not (p=0.030).

Table 4. Affecting factors on the local side effects experienced after vaccination

Muscle Pain on the Injection Site*							
		Yes		No		Chi-Square	p
		n	%**	n	%**		
Sex	**Female**	32	11.0	260	89.0	13.284	**0.001**
	Male	18	28.6	45	71.4		
Weekly Working Hours	**40 hours**	15	8.3	166	91.7	10.256	**0.001**
	More than 40 hours	35	20.1	139	79.9		
Regular Medication	**Yes**	5	6.8	68	93.2	3.975	**0.030**
	No	45	16.0	237	84.0		
	Total	50	14.1	305	85.9		

*Chi-square test **Row percentage

Significant side effects experienced on around the injection site by the variable of age are given in Table 4. Accordingly, the mean age of individuals who experienced stiffness, swelling, and itching was significantly lower than those who did not experience these (p=0.045, p=0.030, p=0.014) (Table 5).

Table 5. Significant local side effects according to the variable of age

Variable		N	Mean	Standard Deviation	SD	t	p
Stiffness*	**Yes**	**52**	**32.94**	**10.266**	353	2.009	**0.045**
	No	**303**	**35.84**	**9.512**			
Swelling	**Yes**	**37**	**32.16**	**10.735**	353	2.177	**0.030**
	No	**318**	**35.80**	**9.48**			
Itchiness*	**Yes**	**41**	**31.95**	**9.967**	353	2.460	**0.014**
	No	**314**	**35.87**	**9.549**			

*Student's t-test

Of the nurses, 39.1% did not experience any systemic side effects after vaccination. The rate of individuals who experienced a systemic side effect was 22.8% while the rate of individuals who experienced two systemic side effects was 13.2%. Furthermore, the rate of individuals who experienced three or more systemic side effects was 24.7%.

The most common systemic side effects experienced after the vaccination were fatigue (39.2%), headache (34.1%), arthritis (25.1%), and sore throat (10.4%), respectively. The least common side effects were changes in the sensation of taste (4.2%, changes in mucosa (4.2%), and coughing (4.2%) (Table 6).

The factors that affected systemic side effects experienced after the COVID-19 vaccination are presented in Table 5. Accordingly, the incidence rate of experiencing fatigue after vaccination was significantly higher among those who had been diagnosed with COVID-19 at any time before vaccination (p=0.004) and who consumed alcohol (p=0.028).

The incidence rates of appetite changes (p=0.041), itching (p=0.010), and fatigue (p=0.010) were higher among those who worked longer than 40 hours a week.

Table 6. Undesirable Side Effects after Vaccination (Systemic)

Side effects	% Percent
Fatigue	39.2%
Headache	34.1%
Arthritis	25.1%
Sore Throat	10.4%
Nausea	9.9%
Fever	8.2%
Vertigo	8.2%
Nasal Flow	7.9%
Appetite Changes	6.5%
Diarrhea	5.9%
Itchiness	5.9%
Abdominal Pain	5.6%
Cough	4.2%
Changes in Mucosa	4.2%
Changes in Taste Sensation	4.2%

Sex is the only factor that affected appetite changes. The rate of appetite changes was higher among men than women (p=0.00). The incidence rate of fever, was higher among individuals with a chronic condition (p=0.037).

Table 5. Factors affecting the systemic side effects experienced after vaccination

		Yes		No			
		n	**%****	**n**	**%****	**Chi-Square**	**p**
Fatigue*							
Diagnosed with COVID-19	**Yes**	60	50.0	60	50.0	8.419	**0.004**
	No	79	34.1	153	65.9		
Alcohol Use	**Yes**	13	61.9	8	38.1	4.849	**0.028**
	No	126	37.7	208	62.3		
Weekly Working Hours	**40 hours**	59	32.6	122	67.4	6.667	**0.010**
	More than 40 hours	80	46.0	94	54.0		
	Total	139	39.2	216	60.8		
Arthritis*							
Diagnosed with COVID-19	**Yes**	40	33.3	80	66.7	6.244	**0.012**
	No	49	21.1	183	78.9		
	Total	89	25.3	263	74.2		
Appetite Changes*							
Sex	**Female**	13	4.5	279	95.5	11.156	**0.001**
	Male	10	15.9	53	84.1		
Weekly Working Hours	**40 hours**	7	3.9	174	96.1	4.156	**0.041**
	More than 40 hours	16	9.2	158	90.8		
	Total	23	6.5	332	93.5		
Itchiness*							
Weekly Working Hours	**40 hours**	5	2.8	176	97.2	6.597	**0.010**
	More than 40 hours	16	9.2	158	90.8		
	Total	21	5.9	334	94.1		
Fever*							
Chronic Disease	**Yes**	10	14.3	60	85.7	4.349	**0.037**
	No	19	6.7	266	93.3		
	Total	29	8.2	326	91.8		

*Chi-square test **Row percentage

DISCUSSION

COVID-19 vaccines were first administered to healthcare personnel in Turkey and the CoronaVac (Sinovac) vaccine, which is an inactive vaccine, was the chosen vaccine (20). Side effects reported in different vaccine studies were pain, swelling, fever, headache, muscle pain, and fatigue (8, 9, 21-26). The presence of serious side effects was assessed using a systematic compilation evaluating 11 articles consisting of results on the vaccines and it was found that 168 individuals (total n: 58.773) experienced serious side effects of the vaccine but only one of these side effects was actually related to the vaccine (27). Similarly, no serious side effect was reported by the nurses vaccinated for COVID-19 in this study.

The most commonly reported local side effects were pain, loss of strength, and movement restriction around the injected arm (9, 22, 24, 25, 28). A relevant study reported that pain on the injection site (95.5%), edema (13.3%), and limited arm movements (78.1%) were experienced in the group who was administered with the vector vaccine and that local side effects were more common in the vector vaccine than the mRNA vaccine ($p>0.05$) (24). Another study found the rate of experiencing pain was 31.7% among those who were administered the inactive COVID-19 vaccine (25). A study stated that pain experienced on the injection site in the group who got an inactive vaccine increased as the single dose (3/6 mg) of the vaccine administered increased. The rate of itching, one of the local side effects experienced in relevant studies, was reported as 1% in the group who was administered with the inactive vaccine (28). The incidence rate of itching among local side effects was higher in the vector vaccine than the mRNA vaccine by 0.9% (23). Studies stated that itching varied between 6-8% with an increase in line with the dose of the vaccine administered (10). A study conducted in Turkey found that pain (41.5%) and edema (2.6%) were experienced among the local side effects observed after the administration of the inactive vaccine and that there were differences based on sex (9).

It can be stated that the most common local side effects experienced after the administration of inactive vaccines are pain, sensitivity on the arm due to pain, loss of strength/difficulty moving the arm, local swelling due to injection and stiffness and mild itching induced by this swelling.

Additionally, sex affects the pain felt. In a study, which reported that the incidence rate of pain on the injection site of women who got the inactive vaccine was higher ($p<0.001$). Mean age also affected this, as the rate of those experiencing pain in the ≤32 age group was 66.7% while this rate was 57.8% in the ≥32 age group (9). The results obtained from a study where two different vaccines were administered (n: 655.590) indicated that more reactions to vaccines were observed in women and those younger than 35 and that the incidence rate of pain on the injection site increased at the age of ≤43 in the group who received the mRNA vaccine (23). Another study conducted on a group who received an inactive vaccine reported that 23.1% of women and 15.2% of men experienced pain. The rate of individuals who experienced pain in the age group of 30-39 (24.7%) was higher than other age groups (22). The results of the present study are similar to the relevant literature, and the study revealed that pain was experienced more by women and individuals younger than 35. It is possible to state that women and young adults who got an inactive COVID-19 vaccine might more commonly experience local side effects on the injection site. This should be paid attention to while giving pre-vaccination information.

Medication use of individuals also plays an important part in vaccine side effects. A study conducted with a group who received an mRNA vaccine found that individuals who took regular medication and had chronic conditions experienced oral-systemic side effects (blisters in the mouth, bad breath, ulcerations on the lip and tongue), and the side effects varied based on the medication used (8). A cross-sectional study conducted in Turkey showed that the number of side effects experienced by individuals who took regular medication in the group who received an inactive COVID-19 vaccine was higher (60.1%/70.2%) (9). A relevant study, on the other hand, reported no difference between the reactions to the vaccine of individuals who either took regular medication or were not in a group who were given an inactive COVID-19 vaccine. However, the rate of those who reported having experienced side effects was higher in the group who did not take medication regularly (22). In this study, the rate of side effects observed in individuals who took regular medication was higher. Individuals who regularly take medication generally have chronic conditions, so it would be appropriate to inform these individuals about this matter before vaccination.

One of the most common systemic side effects experienced after COVID-19 vaccination is fatigue (8, 9, 21-25). Fatigue was associated with the disruption in regular sleep routines and it was stated that vaccine-induced side effects were more common in those with bad quality of sleep with a significant difference (22). A systematical compilation that evaluated the side effects of four different vaccines revealed that fatigue and headache were reported after the administration of three vaccines and there were no systemic side effects for the inactive COVID-19 vaccine (26).

Working during the COVID-19 pandemic triggers fatigue, depression, and anxiety for healthcare professionals (29). The workload of nurses has increased (30, 31) and they have felt more stressed during this period (32). A previous study conducted with nurses stated that in pre-pandemic times, nurses made more efforts to maintain order in the home which made them tired more often (33). During the pandemic, nurses had to work overtime due to the increasing workload at hospitals and were not able to sleep or rest sufficiently due to the increasing workload at home due to the lockdowns; thus, they became increasingly more tired, and this situation was reflected on them after vaccination.

One of the factors that affected experiencing fatigue is alcohol use. The body is trained to fight against certain organisms causing disease with vaccination and an immune response is expected to form (15). However, alcohol consumption negatively affects this immune response; thus, alcohol consumption is not recommended during the pandemic (34). This study also showed that fatigue was more common among those who consumed alcohol. This indicates that alcohol intake might be associated with the immune response and might negatively affect it, making people feel more exhausted.

Another side effect reported by the nurses after the vaccination was headache at 18-46% (8, 9, 21-25). The underlying reason for this side effect was explained by fatigue and sleep deprivation (35). According to a study conducted in China, one of the most common problems experienced by nurses was headache (50%). This might be due to migraines and they increase by almost 4 times due to working the night shift (QR: 2.294/ 4.695) (36). Considering healthcare personnel, working the night shift affects the quality of sleep while the disruption in the quality of sleep affects appetite and eating habits (37). The current pandemic has changed people's eating habits and generally increased their sugar intake (38). Studies have emphasized that this period has resulted in increased appetite in men between the age of 18-30 (39). During the pandemic, working night shifts, increased working hours, and increased workloads at home and the workplace might cause nurses to feel exhausted and male nurses to experience more changes in appetite.

Studies stated that high fever experienced by individuals after vaccination was observed more as the dose of the medication increased (10, 40). The literature states that the type of vaccine administered affects fever (24). It has also been emphasized that high fever is experienced more after the second dose (23). Studies reported that the

regression of COVID-19 infection slows down in the presence of certain diseases (23). Some of these diseases are diabetes (41), high blood pressure (42), coronary artery disease (43), and chronic obstructive pulmonary disease (44). Studies on medications used revealed that the side effects experienced by individuals who took antihypertensives, antihistamines, and oral contraceptives were different ($p<0.05$) and general side effects increased in individuals who regularly took medication due to their illnesses (r:0.122) ($p<0.05$) (8). Another study reported that individuals with chronic conditions experienced more vaccine side effects but there was no relationship with medication (22). High fever might be experienced more by individuals with chronic conditions after vaccination and individuals in this group should be informed of this and followed up.

Limitations of the Study: This study was conducted with nurses using the online survey method. In addition to limitations due to the quantitative design of the study, this study is limited to healthcare professionals who could use communication technologies, who agreed to participate in the study, and who had studied nursing. Additionally, all the healthcare personnel in Turkey were vaccinated with the Sinovac vaccine; thus, the results cannot be generalized for all vaccines.

CONCLUSION

This study found that no serious side effect was observed after the inactive COVID-19 vaccine, almost two-thirds of those who got vaccinated experienced at least one local or systemic side effect, women and people younger than 35 were more affected by the vaccine. The local side effects of the vaccine, along with increased appetite, and fatigue were experienced more intensely by individuals who worked longer than 8 hours a day, and that getting vaccinated after being diagnosed with COVID-19, the presence of chronic conditions, and alcohol intake might increase the side effects of the vaccine.

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