



# Perceptions of COVID-19 Vaccines Side Effects

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## Abstract

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**BACKGROUND:** Vaccines are one of the best interventions developed for eradicating COVID-19. In Albania, COVID-19 vaccination uses different types of vaccines: Pfizer, AstraZeneca, CoronaVac, and Sputnik V. Like any other vaccine, these have side effects too.

**AIM:** This study was carried out to identify the perception of the side effects of vaccines.

**METHODS:** A quantitative study using a cross-sectional survey was conducted between April and September 2021 to collect data on the effects of the COVID-19 vaccine among individuals in Shkodra region. Data were collected online through a self-administered survey created on Google Forms which had been randomly delivered to individuals (aged  $\geq 18$  years) using social media sites (Email and WhatsApp). All data collected were analyzed with Microsoft Office Excel 2010, using the exact Fisher's test and  $\chi^2$  test.

**RESULTS:** This study included 292 citizens, out of which 200 were female and 92 were male; 62% were from urban areas and 38% from rural areas of Shkodra region. The random sample of the citizens who took part in this study is 44.5% (18–30 years old). A massive percentage of the participants, 66.4%, had received the second dose of the vaccine. Our study shows that 55.8% of these citizens have had side effects after the first vaccination dose, and only 43.8% have had side effects after the second dose. About 80.6% of the participants were well informed about the type of vaccine they got.

**CONCLUSIONS:** Side effects from vaccines were reported. Injection site pain and fatigue were the most common first dose side effects (55.8%). The same side effects were reported for the second dose. The side effects were presented during the first 12 h after the vaccination in most cases. Side effects were more prevalent in people  $>50$  years old. Older people have a higher probability to have more side effects from the COVID vaccine. There is no statistically significant relationship between gender and the presence of the side effect from the COVID vaccine. People living in urban areas have a higher probability to have side effect from COVID vaccine comparing with people living in rural areas. People being vaccinated with Pfizer vaccine have a higher probability to admit the presence of side effects.

## Introduction

On March 11, 2020, the WHO declared the SARS-CoV-2 outbreak in China a pandemic. Hence, all countries implemented physical distancing measures as an emergency response to contain COVID-19. This pandemic is expected to impose enormous morbidity and mortality burdens while severely disrupting societies and economies worldwide. Only when herd immunity is reached can SARS-CoV-2 no longer circulate. Because physical distancing measures aim to reduce the virus transmission to the lowest levels, herd immunity can only be achieved by mass vaccination. Several vaccines against COVID-19 are currently in human trials and have shown excellent safety and efficacy in Phase 3 trials. The development of multiple vaccines against COVID-19 within 1 year of the epidemic is unprecedented and an immense accomplishment. The effectiveness of many developed vaccines exceeded expectations, yet several

challenges remain. Vaccinations are far from complete in developed nations and have barely begun in many developing countries, suggesting that achieving worldwide herd immunity against the virus may take several years. Furthermore, vaccine hesitancy is growing, especially in the young, who generally cope well with COVID-19, with minimal or no symptoms. In addition, it is well documented that COVID-19 vaccines can have substantial side effects. The fear of these side effects may approach that of SARS-CoV-2 infection itself in some populations [1].

A study among Czech health care workers showed that the most common side effects of the Pfizer-BioNTech COVID-19 vaccine were injection site pain, fatigue, headache, muscle pain, chills, and joint pain. The oral side effects were significantly associated with headache, nausea, muscle pain, fever, and lymphadenopathy [2].

Another study explored short-term adverse effects of vaccines to be moderate in frequency, mild

in severity, and short-lived. Adverse effects are more frequently reported in younger individuals, women, and those who previously had COVID-19. The post-vaccine symptoms (both systemic and local) often last 1–2 days from the injection [3].

Evidence shows that vaccine recipients' symptoms were frequent, primarily mild to moderate, and commonly reported after the second dose. However, there is a lack of data on patients with a previous diagnosis of COVID-19. It was found that vaccine recipients experienced more frequent side effects after a first dose of the Pfizer-BioNTech COVID-19 vaccine compared to other vaccines [4].

Vaccine efficacy depends not only on the vaccine but also on the characteristics of the vaccinated persons. Psychological factors are also implicated in the prevalence and severity of vaccine-related side effects [5].

The presence of fatigue and headache after vaccination for COVID-19 should be viewed positively: As a necessary prelude to an effective immune response. The side effects of vaccination will nearly always be mild and transient and indicate merely that the vaccine is stimulating the production of interferon, the body's in-built immune stimulator [1].

Therefore, we have conducted this study because:

1. Most people refuse to get vaccination cause of fear of the side effects (short and long terms).
2. In our country, we do not have reported data information about the side effects of vaccines against COVID-19.

## Methods

### *Aim*

This study aimed to identify the most common side effects of COVID vaccines and why people have decided to get vaccinated according to their perceptions.

### *Design*

We conducted a quantitative study using a cross-sectional survey with citizens of Shkodra region April–September 2021. The following components were evaluated during the study: Peoples' perceptions about the side effects of the vaccines against COVID-19, number of vaccine doses given, type of vaccines, and the reasons why they have decided to get vaccinated.

### *Sample*

The people who participated in this study were randomly selected citizens from the Shkodra region. To

estimate the proper population proportion, considering the population of about 66,000 people, we have chosen a sample proportion of 80%, with a confidence level of 95%, with margin error of 5%, the sample should be 245 people [6]. This study included 292 people, 200 females, and 92 males, 62.7% from urban areas and 37.3% from rural areas of Shkodra region. Most of the citizens included were 18–30 years old (45.8%).

In our study, 65.4% have received the second dose of the vaccine. Only 55.8% of these people have had side effects from vaccination. All data were obtained during the period April–September 2021, which corresponds with the first and the second dose of vaccination of the population.

### *Data collection*

The data were collected using a questionnaire, which focuses on two main aspects: People's perception of the side effects of vaccines when they received the first and second dose and if they have appropriate information about the vaccines. The second aspect is why they decided to be vaccinated and what it would be their decision whether they would be able to choose the type of vaccine.

For 292 participants, other demographic data were also requested such as age, gender, employment status, place of residence, and the comorbidity. Data were collected using a questionnaire with closed and open questions. The survey performed was anonymous. Citizens' opinions were collected through a self-administered online questionnaire. The survey was administered using the Google Forms® platform through email and WhatsApp.

### *Ethical consideration*

This study dealt with the population's perception of the side effects of vaccines and not as research on human subjects. Participants were informed about the questionnaire. They could then decide whether to participate or not. Questionnaire responses were completely anonymous to ensure participants' privacy. The study has been reviewed and approved by the Ethical Committee, Faculty of Natural Sciences, Department of Nursing, University of Shkodra No. prot. 31/2. Dt. 12/04/2021, Shkodër Albania.

## Results

The Municipality of Shkodra has 208,618 inhabitants, with the highest concentration of population in the city of Shkodra with 115,215 inhabitants. This survey reports an overview of Shkodra region citizens'

perception (over 18 years old, 57% = 66,000 people) about the side effects of the COVID-19 vaccines.

### Respondents characteristics

This study included 292 people, 200 (68.5%) females and 92 (31.5%) males, 62% from urban areas and 38% from rural areas. Most of the citizens included in this study sample were 18–30 years old (44.5%). As shown in Table 1, 34.9% of participants were nursing students, 13% were teachers/professors, 20.1% were nurses, 7% were doctors, 4.8% clerks/office workers, and 14.7% retired and housewives. Only 22.3% of study participants suffer from different comorbidity. Regarding the presence of comorbid diseases, they have reported more than 1 comorbid disease. As shown in Table 1, 24.4% of people admitted to having cardiovascular diseases; 44.2% have arterial hypertension, 17.4% diabetes mellitus, 3.5% have pulmonary diseases, 4.7% hematologic disorders, 10.4% have digestive diseases, and 4.7% kidney and urinary tract diseases. Referring the vaccine type results that 55.1% of the participants were vaccinated with Pfizer-BioNTech, 29.1% with AstraZeneca, 11.3% with CoronaVac, and 4.5% with Sputnik V.

**Table 1: Demographic characteristics of respondents'**

Demographic characteristics	Frequency, n (%)
Respondent age category (year old)	
18–25	113 (38.7)
26–30	17 (5.8)
31–40	41 (14.0)
41–50	38 (13.0)
51–60	43 (14.7)
>60	40 (13.7)
Total	292 (100.0)
Gender	
Male	92 (31.5)
Female	200 (68.5)
Total	292 (100.0)
Respondent's profession	
Student/nursing students	102 (34.9)
Teacher/professor	38 (13)
Nurse	59 (20.1)
Doctor	11 (7)
Clerk/office worker	14 (4.8)
Retired	35 (12)
Housewife	8 (2.7)
Policeman	3 (1)
Worker	22 (7.5)
Total	292 (100)
Respondent's residence	
Rural	181 (62.0)
Urban	111 (38.0)
Total	292 (100.0)
Respondent's comorbidity status	
Yes	66 (22.6)
No	206 (70.55)
Total	292 (100.0)
Type of comorbid diseases (reported more than one comorbid disease at the same time)	
Cardiovascular diseases	21 (24.4)
Arterial hypertension	38 (44.2)
Diabetes mellitus	15 (17.4)
Pulmonary diseases	3 (3.5)
Hematologic diseases	4 (4.7)
Digestive diseases	9 (10.4)
Kidney/urinary tract diseases	4 (4.7)
Respondent's vaccination status	
The first dose of vaccination	98 (33.6)
Second dose of vaccination	194 (66.4)
Total	292 (100.0)
Respondent's type of vaccine	
Pfizer-BioNTech (1)	161 (55.1)
AstraZeneca (2)	85 (29.1)
CoronaVac (3)	33 (11.3)
Sputnik V (4)	13 (4.5)
Total	292 (100)

In our study, 80.6% of participants admitted that they had the necessary information about the vaccine

and the vaccination process. Participants have different reasons, even more than 1 reason to get vaccinated. It is the fact that 34.4% referred that professional status is the main reason for getting the vaccine, 27.5% for easy travel, 23.6% for a health condition, 17.4% because they are afraid of being infected by COVID-19, 15.2% because they have been infected before and would not like to experience the same clinical situation, and 13.8% are forced because of the workplace. According to the results, 66.4% of participants have received the second dose of the vaccine.

### Populations' perceptions about the side effects of the vaccine

Our study shows that 55.8% of these people have had side effects after the first dose of vaccination and only 43.8% have had side effects after the second dose. Almost 8.6% of people have had side effects immediately after vaccination, 15.3% after 1–2 h, 44.2% after 3–12 h, 24.5% after 12–24 h, and 7.4% after 24–48 h.

Interestingly, the side effects after the second dose were less and easier than the 1<sup>st</sup> time 58.8%. However, 13.0% had the same sensation as after the first dose and 28.2% had more severe side effects than the first dose of vaccine. Based on participants' responses, 75% of people were well informed about the type of vaccine they got. The signs frequently reported by participants were such as injection site pain 58.2%, fatigue 57.7%, headache 35.3%, muscle pain 29.4%, fever and chills 40.8%, joint pain 15.4%, arm numbness 46.3%, vertigo 15.9%, chest pain 6.0%, sweat 16.4%, and axillary lymphadenopathy 1.5%. The oral side effects were such as tongue numbness 1.5% and metallic taste in the mouth 1.0%.

If they had to choose the vaccine, 65.1% of the participants would be vaccinated only with Pfizer, 13.4% with AstraZeneca, 8.2% with Sputnik, 8.2% with Sinovac, 4.1% with Moderna, 6% of them had no preference, and 4.5% would not like to be vaccinated at all. Their hesitancy and doubts against vaccination for COVID-19 were related with the reliability of the vaccine, its effectiveness, and safety. Most of the participants choose Pfizer because they think that it has more minor side effects, it is more effective, and it is the best (Table 2).

### The association between side effects and other characteristic's population

From the cross-tabulation between age and the presence of the side effect from the COVID vaccine, we can see that a statistically significant relationship exists between these two variables ( $p = 0.031$ ) (Table 3).

From the cross-tabulation between gender and the presence of the side effect from the COVID vaccine, we can see that there is no statistically significant

**Table 2: The perception of side effects of the vaccine**

Perceptions	Frequency, n (%)
The presence of health complaints after vaccination	
Yes	163 (55.8)
No	129 (44.2)
Total	292 (100.0)
Time of onset of vaccine side effects	
Immediately	14 (8.6)
After 1–2 h	25 (15.3)
After 3–12 h	72 (44.2)
After 12–24 h	40 (24.5)
After 24–48 h	12 (7.4)
Total	163 (100)
Signs of side effects	
Injection site pain	117 (58.2)
Fatigue	116 (57.7)
Fever and chills	82 (40.8)
Headache	71 (35.3)
Arm numbness	93 (46.3)
Vertigo	32 (15.9)
Muscle pain	59 (29.4)
Chest pain	12 (6.0)
Joint pain	31 (15.4)
Sweat	33 (16.4)
Tongue numbness	3 (1.5)
Metallic taste in the mouth	2 (1.0)
Axillary lymphadenopathy	3 (1.5)
The presence of side effects after the second dose of vaccination	
Yes	85 (43.8)
No	109 (56.2)
Total	194 (100.0)
The severity of side effects after the second dose of the vaccine	
Same as the 1 <sup>st</sup> time	11 (13.0)
Less and more accessible than the 1 <sup>st</sup> time	50 (58.8)
More severe than the 1 <sup>st</sup> time	24 (28.2)
Total	85 (100.0)

relationship between these two variables ( $p = 0.603$ ) (Table 4).

**Table 3: The association between age and side effects – Chi-square tests**

Correlation	Value	df	Asymptotic significant (two sided)
Pearson Chi-square	12.292 (a)	5	0.031

From the cross-tabulation between residence and the presence of the side effect from the COVID vaccine, we can see that a statistically significant relationship exists between these two variables ( $p = 0.004$ ). We can say that people living urban area have a higher probability to have side effect from COVID vaccine comparing with people living in rural areas (Table 5).

From the cross-tabulation between type of vaccine and the presence of the side effect from the COVID vaccine, we can see that a very statistically significant relationship exists between these two variables ( $p < 0.001$ ) (Table 6).

People being vaccinated with Pfizer vaccine have a higher probability to admit the presence of side effects.

## Discussion

The COVID-19 pandemic started a completely new reality for people worldwide. Consequently, every

government has taken different measures to prevent the virus from further spreading. In Albania, the first case of COVID-19 was officially reported on March 8, 2020. As an immediate response, the Albanian government started the quarantine, which lasted until May 2020. The measures taken during this period included the shutdown of all public and private education institutions, the shutdown of all physical retail businesses, the food and industry service, the cancellation of all flights, and the shutdown of all physical national borders. The final measure taken was the limitation of movement of citizens and private cars during specific time frames. After May, restrictions started to be released, and people moved again.

Albania started vaccination on January 11, 2021. According to the vaccination strategy, the process began with the category of the elderly over 80 years old. Then, on March 15, with the arrival of 38,400 doses of the vaccine from AstraZeneca, there started the vaccination of the staff working in educational institutions. In Shkodra, the COVID-19 vaccination process started on the February 16, 2021. The first citizens who got vaccinated were the healthcare professionals and old people living in the elderly residential care homes. Acceptance of the COVID-19 vaccine and achieving good vaccine coverage for each target group at the national level has been met with resistance in the Albanian population, especially young people. Lack of reliable information, lack of access to scientific data, and the impact of the media and social networks increased vaccine hesitancy. In 2021, Albania faced a slow vaccine uptake, especially among the young generation, with COVID-19 vaccine coverage for the 16–24 age group being only 18%, with the 2<sup>nd</sup> dose, in November 2021.

To tackle the fear, myths, and misconceptions about the COVID-19 pandemic and vaccination, UNICEF, along with the Institute of Public Health, Ministry of Health and Social Protection, and in collaboration with the University of Medicine Tirana, supported by USAID, initiated a communication campaign with students from three central regions of Albania (Tirana, Durres, and Shkodra). This aimed to create a better understanding of the importance of vaccines within the student community. Well-known medical experts had their say on the best way to increase vaccine uptake. In collaboration with immunization experts from the Institute of Public Health, the health promotion department used the knowledge, attitudes, and practices survey to understand specific behavior, including COVID-19 vaccination. The campaign proved to lead to a meaningful dialogue to combat fears and misinformation [7].

**Table 4: The association between gender and side effects –Chi-square tests**

Correlation	Value	df	Asymptotic significant (two sided)	Exact significant (two sided)	Exact significant (one sided)
Pearson Chi-square	0.309 (b)	1	0.578		
Continuity correction (a)	0.181	1	0.670		
Likelihood ratio	0.309	1	0.578		
Fisher's exact test				0603	0.335
Linear-by-linear association	0.308	1	0.579		

**Table 5: The association between residence place and side effects – Chi-square tests**

Correlation	Value	df	Asymptotic significant (two sided)	Exact significant (two sided)	Exact significant (one sided)
Pearson Chi-square	8.318 (b)	1	0.004		
Continuity correction (a)	7.612	1	0.006		
Likelihood ratio	8.336	1	0.004		
Fisher's exact test				0.004	0.003
Linear-by-linear association	8.287	1	0.004		

On May 26, 2022, 45.6% of the population received at least the first dose, 43.4% were fully vaccinated, and only 10.2% were given booster shots. These data show the low level of vaccination in Albania. According to the data reported by the WHO in May 2022, vaccination rates against COVID-19 in the West Balkan countries remain low: Slovenia 57.62%, Croatia 55.12%, Serbia 47.8%, Kosovo 45.75%, Montenegro 40.59%, North Macedonia 40.29%, Bosnia, and Herzegovina 25.79% [8].

**Table 6: The association between type of vaccine and side effects – Chi-square tests**

Correlation	Value	df	Asymptotic significant (two sided)
Pearson Chi-square	20.603 (a)	4	0.000
Likelihood ratio	21.300	4	0.000
Linear-by-linear association	2.195	1	0.138

Every country has different regulations and recommendations despite the similarity of the preventive strategies. COVID-19 preventive behavior includes personal and community preventive measures, immune boosting, and self-screening/medication. In addition, factors related to these measures involve sociodemographic, sociopsychological, health status, and enabling factors [9]. According to Mahdi, 2021, we should consider medical students as leaders and guides in the health system for increased planning and education of the population for COVID-19 vaccine acceptability [10]. Furthermore, health education interventions appropriate for the language, culture, and socioeconomics can help increase the uptake of global vaccination programs to cope with future pandemics [11].

## Conclusions and Recommendations

A statistically significant relationship exists between age and the presence of the side effect from the COVID vaccine. Older people have a higher probability to have more side effects from the COVID vaccine.

There is no statistically significant relationship between gender and the presence of the side effect from the COVID vaccine.

A statistically significant relationship exists between residence and the presence of the side effect from the COVID vaccine. People living urban area have a higher probability to have side effect from COVID vaccine comparing with people living in rural areas.

People being vaccinated with Pfizer vaccine have a higher probability to admit the presence of side effects.

In collaboration with immunization experts, health promotion departments must provide accurate information about the side effects of vaccines and their treatment. Face-to-face communication and organizing information sessions to build trust and communication, especially with young people, are needed to combat fear and misinformation.

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