Original Article

Possibility of infection with COVID-19 in vaccinated Iraqi people

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ABSTRACT

Objective: As the pandemic effect of viral infection with COVID-19 caused dreadful from death in worldwide, thereafter many vaccines manufactured against it. The aim of this study is to explore the acceptability of anti-COVID-19 vaccine in Iraqi population.
Methods: An online survey conducted in February 2022 among current vaccinated people that included 308 participants (108 males and 200 females) aged (18-66) years. The questionnaire involved questions about the vaccine type ,vaccine dose number, presence of infection after vaccination, symptom of infection after vaccination, period of infection appearance after vaccination, duration of infection presence after vaccination.
Results: The upper percent of questionnaire database reported that 68% of people take Pfizer vaccine, 84 % of people take twice dose of vaccine. Moreover, 68 % of people not infected after taking vaccine, symptom that appear after vaccination 15% mild to moderate. While, the period of infection appearance after vaccination was 25% more than one month, and the duration of infection presence after vaccination was 22% about one week.
Conclusion: The outcomes of this study showed the important role of anti- COVID-19 vaccine in constricted the spreading effect of COVID-19 infection for a reasonable level.

Keywords: Chronic disease ,COVID-19 vaccine, infection recurrence, treatment.

INTRODUCTION

Coronavirus is one of the harmful viruses that affect the human lung and respiratory tract [1]. As well, this virus can affect animals and cause a serious of illnesses such as gastroenteritis and pneumonia [2]. Many studies reported that Coronavirus developed from other hazard viruses that caused Middle East Respiratory Syndrome (MERS) or Severe Acute Respiratory Syndrome (SARS) [3].

SARS -virus infections that caused high fevers, breathlessness, and pneumonia, firstly appeared in Guangdong, south China, in 2002. Thereafter it spread quickly to many other parts of the world. About 8096 cases and 774 deaths reported across 26 countries due to this virus [4].

Whereas MERS-virus was initially discovered in 2012 in Saudi Arabia and caused acute respiratory syndrome (2494 cases) and death (858) in more than 25 countries [5].

The first case COVID-19 virus infection characterized by atypical unknown pneumonia identified in December 2019 in Wuhan, Hubei province. The patients displayed breathing difficulties, dry cough, high fever (greater than 38 ^{0}C), and malaise.

As this infection spread quickly, the World Health Organization this infection as a pandemic infection. By early June 2021, this emerging illness had killed over than 3 million people and infected over than 170 million individuals worldwide [1].

In the majority of the affected countries, the rate of infection does not appear to be slowing down, and various levels of lockdowns have been issued in an effort to stop the virus's spread. In severe cases, the illness results in bleeding, pneumonia, septic shock, and metabolic acidosis [6]. According to the history, the incubation time has been predicted to be between 5 -14 days for different patients [7]. The transmittance of this virus occurs by droplets of patients' nasal through the air, near contact between patient and healthy people [8].

As the structure of COVID-19 is develop from the (MERS) and (SARS), accelerated the development of several vaccine platforms during the first part of 2020. Although COVID-19 vaccines produced quickly, they must first pass through three phases of clinical trials before they can consider safe and effective. These phases are interrelated to hasten the steps, permit quickly uses of vaccine, and thereafter control the pandemic [9].

May studies reported that COVID-19 vaccines effectively diminish the severity and symptoms of the infection and hence lowering the hospitalizations [10]. Moreover, the researcher stated that the impact of SARS-CoV-2 vaccine on spreading of infection seemed to be similar as in non-vaccinated people. [11] Likewise, reported in nasopharynx viral infection between vaccinated and non-vaccinated patients [12].

Many diseases such as diabetes, hypertension, coronary heart disease and obesity are associated with the increased levels of inflammatory cytokines like interleukin 1,and 6,TNF-alpha and others. COVID -19 infection was also associated with increased level of cytokines like interlukine-1, and 6, TNF-alpha and others and caused tissues damage due to this cytokines storm, therefore the patients with chronic diseases may be more risky for healing from this viral infection [13,14].

Three types of anti COVID-19 vaccines are manufactures and approved by Food and Drug Administration (FDA).These are Pfizer-BioNTech COVID-19 vaccine, AstraZenca COVID-19 vaccine, Sinopharm COVID-19 vaccine. Pfizer-BioNTech COVID-19 vaccine also called Pfizer COVID-19 vaccine ,was approved on 23 Aug 2021.

This vaccine uses messenger RNA that causes the body's cells to make an antibody against symptomatic SARS-CoV-2 infection. It is 95% effective and safe in patients with co illnesses that related to developing risk illness. It is also safe for person aged 5 - 11 years old with the adjusting of the doses. WHO recommends 3 doses of vaccine especially for immuno-compromised patients .The protecting effect appear after 12 days from first dose. To obtain full protection, another twice dosage with a gap of 21-28 days are required [15].

Astra Zenca COVID-19 vaccine effect by inhibited the replication of viral vector. It is effectivity was 76%. It is safe and effective in patients with chronic diseases .The optional doses are two doses detached by 8-12 weeks. Sinopharm COVID-19 vaccine is 78% effective and is inactivated virus technology that instructs the body to make antibodies using the immune system. People who are already on COVID-19 infection can receive the vaccine. The suggested dosage is to administer the vaccine twice doses within six months of the previous natural infection [15].

The Aim of this study is to explore the affectivity of anti COVID-19 vaccine among vaccinated Iraqi people from different age and explore the severity level of COVID-19 infection in those vaccinated people by online survey.

MATERIALS AND METHODS

An online survey was conducted in College of Pharmacy, Al-Nahrain University during the COVID-19 pandemic. Google form questionnaires was sent to different groups of people from 1 Feb 2022 to 28 Feb 2022 to explore the affectivity and acceptability of anti- COVID-19 vaccine in Iraqi population.

The survey included 308 participants (108 males and 200 females) aged between 18-66 years. The questionnaires was constructed on the basis of what we intended to report and involved : type of vaccine taken, number of vaccine dose, infection after vaccination, severity of infection post vaccination, duration of infection (after vaccine), period of infection appearance after vaccination ,symptoms of infection that appears after vaccination, presence of chronic disease, treatment use for infections.

RESULTS

The samples of this study consisted of 308 participants, distributed by 35% males (108 patients) and 65% females (200 patients). Concerning the type of vaccine used, about 68% (210 persons) taken Pfizer vaccine while 20% (61persons) taken Sinopharm vaccine and 12% (37

persons) taken Astrazenica vaccine. Whereas the number of vaccine doses taken are two doses for 84%, one dose for 12% and three doses for 4% of participants as shown in the Figure 1.

Regarding the percent of infection after vaccination, the majority of participants are not infected 68% (209), while the remaining 32% (99) are infected with COVID 19. Additionally, the severity of the symptoms post vaccination for the infected people 32% arranged as 30% mild - moderate symptoms, and 2% severe symptoms.

Considering the period of appearance of infection after vaccination, the percent of distribution was 25% more than one month , 3% 3-4weeks , and 1% 1-2 weeks, and 3% less than 1 week from 32% of infected participants (see Figure 1).

The databases of presence of chronic diseases showed that the majority of participants (92.9%)

are healthy. Nevertheless some patients suffer from chronic diseases as (2.9%) suffer from hypertension, (2.9%) suffer from diabetes and the remaining (2.6%) suffer from asthma.

Additionally, the drugs used during the infection involved 70% vitamins, 60% antibiotics, 25% dexamethasone, 7% paracetamol, 6% antiviral agent, 5% cough syrup as illustrated in Figure 2.

The symptoms of infection that appear after vaccination, most of patients 23% suffer from muscle pain and headache, 22% suffer from fever and chill, 17% feel fatigue and over sleep,14% suffer from dry cough,12% suffer from productive cough,11% loss of smell and taste sense and rhinorrhea, 8% have short breath,5% suffer from diarrhea and vomiting, 3% have red eyes and itches (view Figure 2).
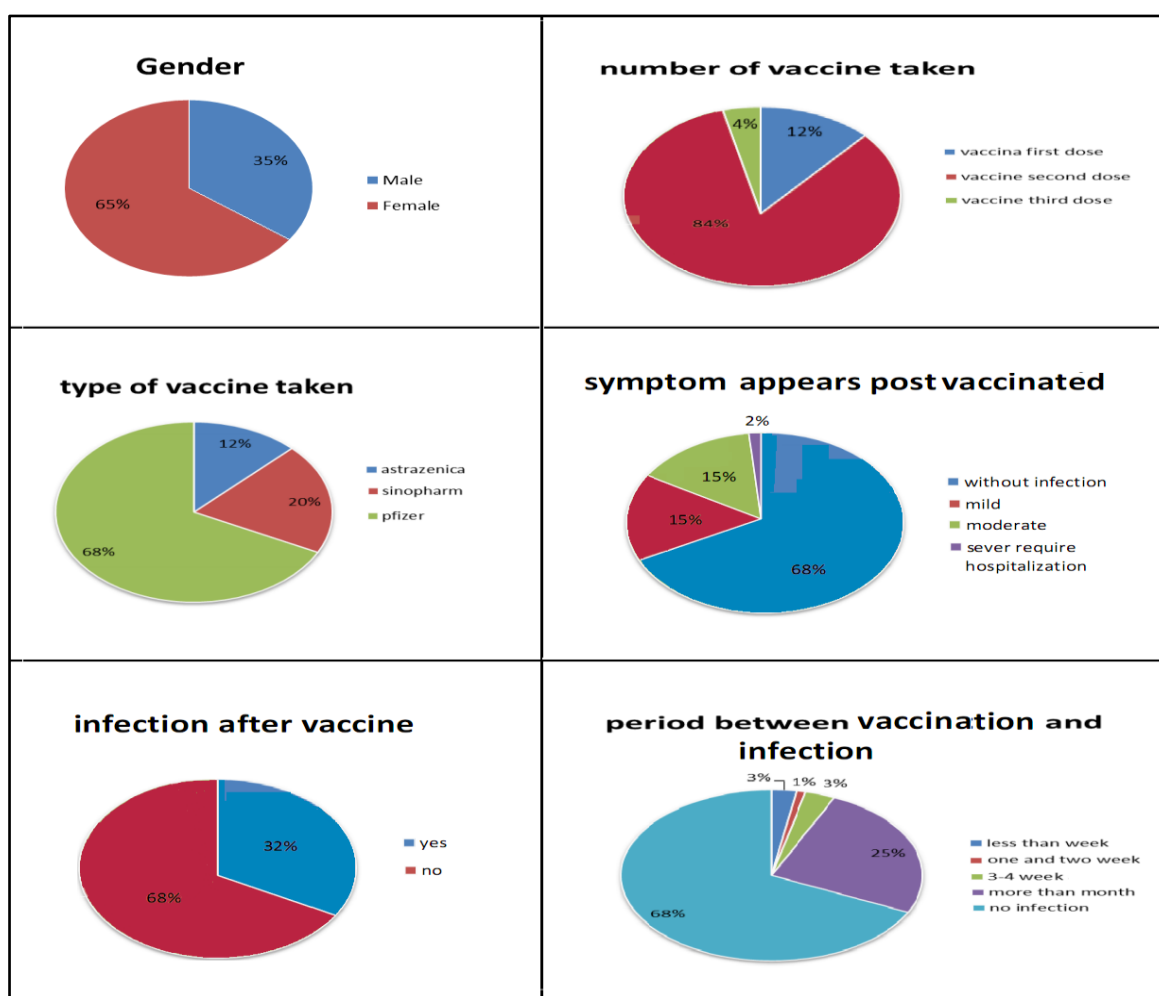

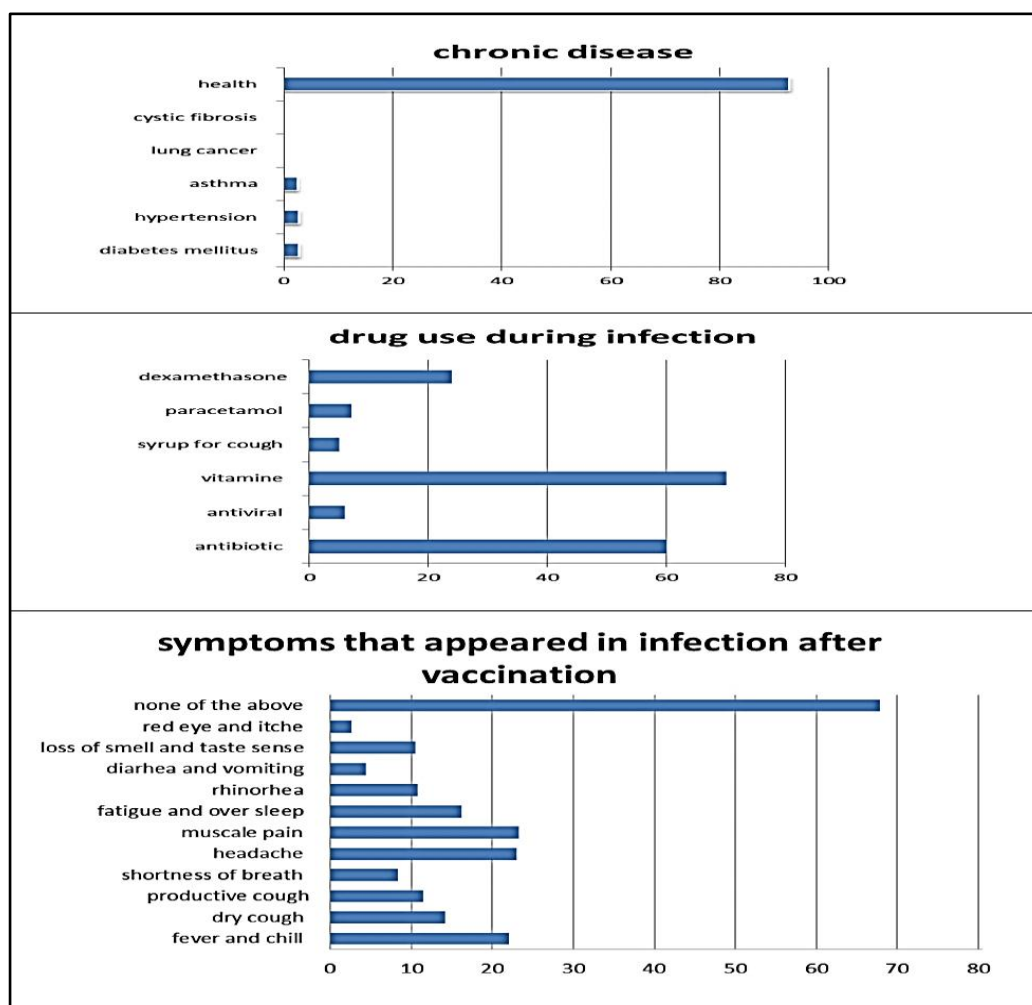**Figure 1.** Distribution percent of different variables in participants sketched by pie charts.

Figure 2. Distribution percent of chronic diseases, drugs used, and symptoms of infection in participants outlined by bar chart.

DISCUSSION

As the viral infection with COVID-19, become more devastated and pandemic by its highly spreading and risky properties. Therefore, the need for potent vaccine is underlined. Many studies that dealing with efficacy of Pfizer-vaccine reported efficacy percent over 90% to minimize symptoms, risk of infection and morbidity [16,17].

Nevertheless, many patients were infected with COVID-19 even they are fully vaccinated. This phenomenon may be related to the immune system of the patients and called (the vaccine breakdown via the infection). Additionally, there is an idea that pre-existing antibodies provoked by the intake of vaccine or by natural infection can protect the body later on against newly strains of COVID-19 infection [18].

This study elucidate the more acceptability in participants to Pfizer vaccine than others (Sinopharm vaccine or Astrazenica vaccine). Additionally, two doses protocol was more acceptable than one or third doses for all vaccine. Concerning the incidence of recurrence of infection , the database showed that 1/3 of all participant suffer from recurrence of viral infection with moderate to mild severity. Whereas 2/3 of participants will have complete protection against covid-19 infection.

However sever infection with hospitalization requirement was less reported in vaccinated participants than in non-vaccinated participants that reported high need for intensive care and hospitalization. The most common sign notice in infected participant after vaccinations were muscle pain and headache, fever and chill, fatigue and loss of smell and taste sense.

CONCLUSION

The outcomes of this study showed the important role of anti- COVID-19 vaccine in constricted the spreading effect of COVID-19 infection for a reasonable level. Meanwhile, third of participant may undergo recurrence of COVID-19 infection after vaccination with mild to moderate severity. Moreover, Pfizer vaccine takes more acceptability in the participants group with two doses regimen more than one or third doses.

CONFLICTS OF INTEREST

No conflicts of interest to be declare.

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