



The race towards stopping the outbreak: COVID-19 vaccination in Israel

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ABSTRACT:

Vaccines are considered a breakthrough in medicine. They protect against disease by providing personal protection to the vaccinated person and by preventing the spread and transmission of diseases.

On Thursday, February 11th, 2020, the World Health Organization (WHO) officially announced the name of the disease caused by the new coronavirus. The name of this disease is "COVID-19". The intensity and rapidity of COVID-19 transmission have led to substantial morbidity and mortality and put considerable pressure on public health systems around the world and the global economy. On December 31st, 2020, the WHO listed the COVID-19 mRNA vaccine for emergency use. On December 20th, Israel launched a vaccination campaign targeting all Israeli citizens, which was divided into three stages. During the first stage, the vaccine was given to the medical staff, then to citizens over 65 years of age, then the third stage of the campaign was expanded to include all the Israeli citizens.

KEY WORDS: COVID-19, Vaccines, Pfizer, Moderna vaccine, WHO, FDA.

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I. INTRODUCTION:

Vaccines are considered a breakthrough in medicine. They protect against disease by providing personal protection to the vaccinated person and by preventing the spread and transmission of diseases. Additionally, vaccines have led to a significant reduction in morbidity and mortality from infectious On Thursday, February 11th, 2020, WHO officially announced the name of the disease caused by the new coronavirus. The name of this disease is "COVID-19". As known up to this day, the geographical origin of the virus was linked to the Huanan seafood wholesale market, which was subsequently reported by journalists to be selling freshly slaughtered game animals. On Wednesday, March 11th, 2020, WHO announced the COVID-19 outbreak as a global pandemic, which is the first announcement of a pandemic since the announcement of the H1N1 pandemic in 2009[1].

The intensity and rapidity of COVID-19 transmission have led to substantial morbidity and mortality and put considerable pressure on public health systems around the world and the global economy [2]. The current response to the pandemic involves implementation of suppression strategies, such as case identification, quarantine and isolation, contact tracing, and social distancing [3].

On December 31st, 2020, the World Health Organization (WHO) listed the COVID-19 mRNA vaccine for emergency use, making the Pfizer/BioNTech vaccine the first to receive emergency validation from WHO since the outbreak began a year ago [4]. The Pfizer mRNA vaccine was found to be up to 95% effective 28 days after the first dose in third phase trial [5]. Recent study found that vaccine efficacy between the first and second doses was 52%, seven or more days after the second dose, vaccine efficacy then rose to 95% [6].

Pfizer has said that it expects to produce 50 million doses of its vaccine this year and 1.3 billion by the end of 2021 [7]. This vaccine belongs to a group of mRNA vaccines and contains nucleic acids that direct the vaccinated cells to produce a protein similar to the corona virus protein, the mRNA particles are wrapped in a fat shell that aids in the immune response, the immune system recognizes the protein produced and creates a training response with high efficacy against the virus [8].

On December 20, Israel launched a vaccination campaign for the Israeli citizens [9]. The vaccine is given in two doses at least 21 days apart. If more than 21 days have passed, the second dose can be obtained,

regardless of the time interval. The body will develop maximum immunity only after receiving the second dose [8].

Side Effects:

Prevalence of mild and transient symptoms after receiving the vaccine: redness and pain in the injection site, fever, chills, fatigue, headache, weakness, muscle aches, joint pain, nausea and enlargement of lymph nodes. These symptoms usually pass between one and two days after the vaccine and are slightly more common after the second dose. Allergic symptoms, including an immediate anaphylactic allergic reaction, are extremely rare. Patients who have had an anaphylactic reaction in the past, for any reason, should consult with the storage staff before receiving the vaccine [8].

Vaccination Campaign:

The vaccination campaign in Israel was divided into three stages. In the first stage, the vaccine was given to medical staff. In the second stage, the vaccine was given to all citizens who are over 65 years of age. Elderly people are in the high-risk group because they are more likely to develop severe disease and have a much higher mortality rate after infection [10]. As for the third stage, it expanded to include all citizens.

Hospitals in Israel began to make appointments for the medical staff to be vaccinated, and a week later, the campaign to vaccinate the elderly was initiated. The Israeli Ministry of Health approved Pfizer's vaccine after the US Food and Drug Administration (FDA) granted it an emergency permit [11].

The percentage of residents in Israel over the age of 65 is among the lowest in the OECD countries, which allows for a rapid vaccination of the population at risk. Moreover, Israel has a relatively small population which is covered by an equal health insurance law. This law provides a basket of services to which every citizen is entitled - including vaccines, which are provided free of charge [12].

Three weeks after administering the provision of the first dose, Israel initiated the provision of the second dose of Pfizer's vaccine. In about one week after vaccination, citizens are supposed to be at the maximum level of protection. Meanwhile, the first encouraging signs of a decrease in the morbidity of the first dose recipients are already being seen [13].

The next stage of the vaccine campaign has escalated, and the Israeli Ministry of Health announced that citizens over 45 years of age can go to the vaccination centers to receive the vaccines.

As of January 14th, 2021, in the global arena, Israel continues to lead in terms of vaccination rates, with more than one-fifth of the population (21%) already receiving the first dose of the vaccine. It is followed, by a considerable margin, by Bahrain with 12% of the population being vaccinated, and the United Arab Emirates with 6% of the population being vaccinated. In fourth place is the United Kingdom [13].

The new mutation of the virus recently discovered in the UK and South Africa continues to infect with increasing rates. This week, another variant was discovered in Japan, originating in Brazil. These viruses raise concerns in the medical community due to the mutations they might have in the areas targeted by the vaccines.

Both Pfizer and Moderna companies have already stated that their vaccines will probably work on the new viruses as well [13].

As of January 21st, about 54 million vaccine doses have been given worldwide, most of them were produced by Pfizer and Moderna companies. The United States of America continues to lead in the total number of vaccines, with about 17 million doses - just over half of the doses it has accumulated so far, followed by China, about 15 million doses, followed by all EU countries with around 7 million doses in total [13]. Figure 1 below provides an illustration of the total number of vaccination doses administered per 100 people in the total population in various countries.

As of January 29th, in Israel, about 2.9 million doses have been given, including more than 1.6 million people who were also vaccinated in the second dose [14]. Israel started to provide vaccination to all Israeli citizens; every citizen over 16 years old can get the vaccines.

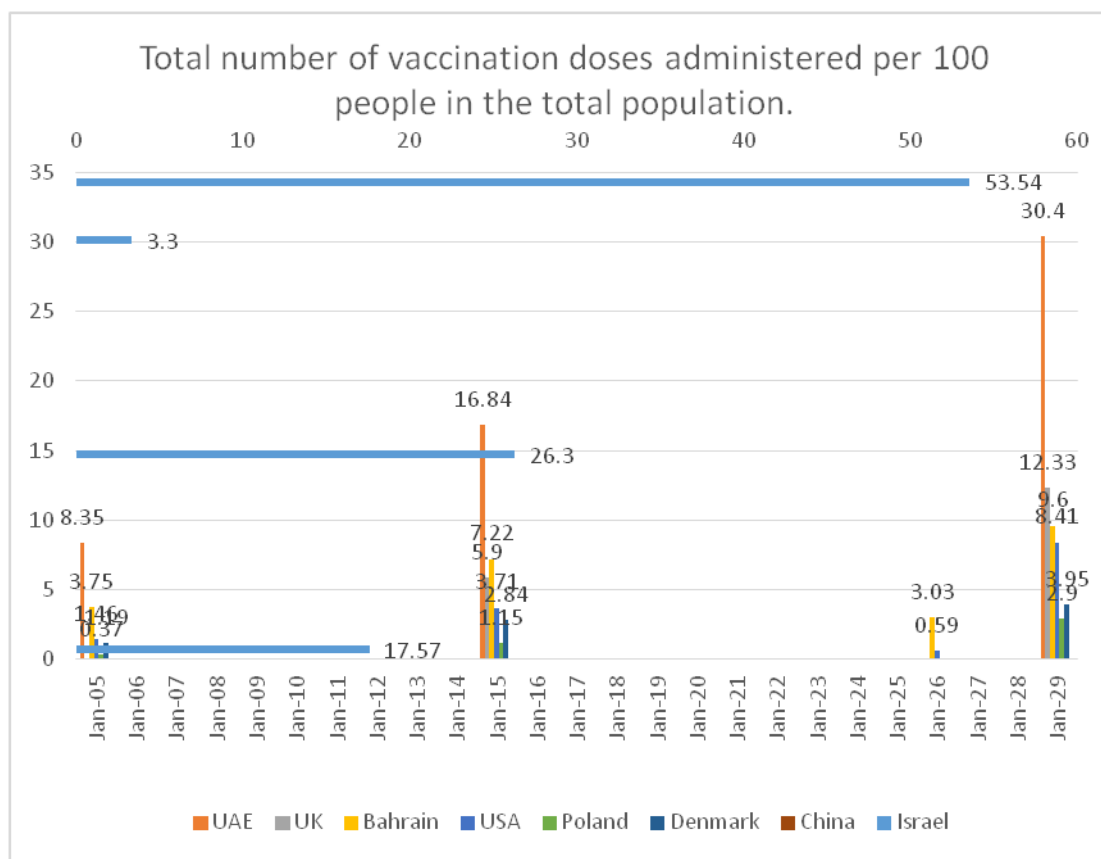


Figure 1 Total number of vaccination doses administered per 100 people in the total population. <https://ourworldindata.org/grapher/covid-vaccination-doses-per-capita?tab=chart&stackMode=absolute&time=earliest..latest®ion=World>

II. SUMMARY:

Up to the day of writing this paper, Israel is continuing the vaccination campaign against COVID-19, in hopes to reach the highest level of vaccinations for its citizens, thus, stopping the outbreak of the virus. Furthermore, Israel remains the first country in terms of percentage of vaccinated population in the race between all the world countries.

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