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Research Article

VIETNAM IN THE CONTEXT OF THE GLOBAL RACE FOR CORONAVIRUS VACCINE

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ABSTRACT

A sudden pandemic has brought the whole world to a standstill for more than a year due to a new virus called Corona, also known as Covid-19. To control and prevent this epidemic, finding a vaccine to stimulate the immune system against the consequences caused by Coronavirus is an urgent task for many countries around the world. So far, the production and supply of vaccines are causing political and economic races around the world. The research, and production of vaccines to prevent Covid-19 are also being actively implemented in Vietnam. The objective of the article is to clarify the context of the global competition for the research, production and supply of Covid-19 Vaccines by using statistics of active cases, and deaths, as long as the data on vaccine Covid-19 doses. Therefore, the article indicates this is not only a medical race but also an economic-geopolitical competition. In addition, it also reveals the inequality that is taking place in this race between developed and developing countries.

KEYWORDS

Covid-19, pandemic, vaccine competition, Vietnam.

INTRODUCTION

According to the World Health Organization Report on 1 April, 2022, there have been 486.761.597 confirmed cases of Covid-19, including 6.142.735 deaths, the number of recoverd cases was more than 425 million

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cases. The regions with the highest total number of Covid-19 cases are Asia, Europe, and the Americas, as follows:

The total number of Covid-19 infections in Europe is 202.693.049 cases, of which 1.940,630 deaths. The epidemic situation in the UK, Russia, and France is still complicated, although the vaccination campaign is still expanding. These are also the leading countries in terms of the total number of cases as of 1 April, 2022.

In the Americas, North America has 54,355,481 Covid-19 cases, including 1,105,071 deaths. The United States remains the worst-affected country with a total of 45,204,373 infections and 733,575 deaths as of October 11, 2021. South America with a total of 38,029,130 cases, of which 1,160,972 deaths and 36,126,124 cases were cured. Brazil is still the leading country in the list of countries with the highest total number of Covid-19 cases in this region with 21,575,820 cases, of which he number of deaths is 601,047 cases and the number of cured cases is 20,678,858.

The most serious effected region is Asia with the number of Covid-19 cases in 2021, making this region have a total number of infections far exceeding Europe and America with 77,141,155 cases, of which the number of deaths is 1,138,963 cases. and cured cases was 73,966,980 cases. India is currently the worst-affected country in the region with 33,971,293 infections, of which the number of deaths is 450,814 cases and the number of cured cases is 33,285,879.

The main reasons Covid-19 in many countries and regions has not been well controlled, even tends to increase, is assessed as: (i) The shortage of Covid-19 vaccine in many countries, especially in low-income countries; (ii) New strains of Covid continuously appear and have a wide spread rate, of which the Delta variant has spread to 120 countries and territories. The World Health Organization assessed that new Covid strains are more dangerous and difficult to control, even in the first half of 2022; (iii) Many countries have soon eased the blockade, distance and reopened the economy.

The measure that is considered the best currently to control the increase in the number of new cases of Covid-19 is the expanded program of Covid-19 vaccine. Controlling the epidemic and achieving herd immunity depends on accessing to vaccines and medichines to treat Covid-19. However, vaccine access remains a challenge for many countries, especially for low-income countries.

FINDINGS

The current situation of the Covid-19 vaccine race

The race to research and produce Covid-19 vaccines

In order to quickly repel the epidemic, many countries around the world have focused on investing in research and development of a vaccine to prevent Covid-19. After many efforts, a number of safe and effective Covid-19 vaccines have been put into production and expanded vaccination is implemented. This is really a great effort of the governments of other countries, bringing the expectation of ending a bad pandemic that has covered the whole year of 2020, but at the same time creating a race to produce Covid-19 Vaccine all around the world.

According to statistics of the World Health Organization (WHO), in the world, there are hundreds of research and development projects for Covid-19 vaccines with countries participation, really forming a global race.

Russia is the first country in the world to license a vaccine against Covid-19. In early December 2020, Russia continued to become the leading country to

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deploy mass vaccination against Covid-19 to the citizens through a system of 70 medical facilities. Not only bringing the safety of its citizens, the SPUTNIK-V vaccine developed by the Gamaleya Institute has attracted global attention and received applications to order more than 1 billion doses from 20 countries, in Latin America, the Middle East and Asian countries are most interested in buying this kind of vaccine.

China was the first country to embark on research and development of a vaccine since January 2020, when it published data on the genetic sequence of nCoV (the first name of SARS-CoV-2). By July 2020, China was one of the leading candidates in the world's race to find a vaccine against Covid-19, so far there were 4 vaccines being tested in phase 3 (clinical trials). This is the last and most important testing step before applying for regulatory approval. In early February 2021, the Chinese Medicines Administration continued to approve the mass vaccination of Sinovac Pharmaceutical's COVID-19 CoronaVac vaccine.

The U.S has launched Operation Warp Speed with an investment from the budget of more than 18 billion USD, to support finding a vaccine before October 2020. This was a cooperation project between the U.S Department of Health and the U.S Department of Defense to shorten the research and development and production time of vaccines to 8 months by combining 3 forces, namely pharmaceutical companies, medical agencies, government and military. This campaign was considered extremely ambitious because a new vaccine often takes many years to develop. There have been many businesses participating in the race to produce vaccines in the U.S, in which the pharmaceutical corporation Pfizer emerged. The logistical support and reduction of procedures from the US government helped this group Pfizer cooperated with BioNtech company (Germany) to successfully research a vaccine Pfizer / BioNTech that is 95% effective in humans. With this result, the U.S and a several of European countries such as the UK, Canada... have ordered and licensed the use of vaccines of the Pfizer/BioNTech consortium and implemented a nationwide vaccination program at the end of December 2020.

Recently, the race to produce a Covid-19 vaccine also has the cooperation of the British-Swedish joint venture pharmaceutical company AstraZeneca and the University of Oxford (UK). The UK's Medicines and Medical Products Regulatory Agency (MHRA) approved the use of AstraZeneca/Oxford vaccine in the last days of 2020 and the nationwide vaccination deployment in early January was considered as a great success of this country's science in the race against Covid-19.

Thus, many vaccines have been licensed such as: Sputnik V (Russia), Pfizer/ BioNTech, Novavax, Johnson & Johnson, Moderna, Inovio (USA), Covaxin (India), Oxford/AstraZeneca (UK), Sinovac, Sinopharm (China) ... The successful production of a covid-19 vaccine can be considered a breakthrough for the world in 2021. However, according to the assessment of the World Health Organization, each country set its own standards and produced its own vaccines, does not cooperate and does not share information to jointly research and develop vaccines. Some countries even do not recognize and doubt each other. This was not only detrimental to global vaccine research and development, but also presented a series of serious obstacles and complications for future vaccination and evaluation of vaccine efficacy.

In addition, in the context of increasingly complex epidemics, many countries have considered the competition for vaccine research and development as an international strategic competition. The research

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and development of vaccines before the pandemic can not only take the initiative in the fight against the epidemic and restore the country's economy, but also be a huge source of profits from vaccines' export.

According to a report on Covid-19 vaccine supply by an anti-poverty campaign called ONE Campaign, based on the analysis of vaccine purchase contracts of countries from the world's top 5 Covid-19 vaccine manufacturers. Currently, including Pfizer/BioNTech, Moderna, AstraZeneca/Oxford, Johnson & Johnson, and Novavax, the US, European Union (EU), UK, Australia, Canada and Japan have signed a contract to buy more than 3 billion doses of the Covid-19 vaccine, more than 1 billion doses compared to the 2.06 billion doses needed to inject 2 doses per person for the entire population of these countries. Even the Canadian government has guaranteed the number of vaccines 5-6 times more than the need for injections for citizens in the country. This leaves developing countries facing vaccine shortages, especially in Africa, and poses the risk of a prolonged pandemic. Experts estimate that 90% of developing countries may not receive a Covid-19 vaccine for vaccination in 2021.

The competition for vaccines does not only take place among countries, but within a country. Typically, the scramble for the right to prioritize a Covid-19 vaccine is becoming concerned than ever for American businesses and workers, to determine which occupations will be the top priority. Many American businesses have been lobbying to promote the inclusion of their employees as the first priority for vaccination.

In Poland, the Ministry of Health has opened an investigation after it was reported that many famous figures, including politicians and famous actors, used money and influence to have vaccination. Under the co-direction of Gavi, the Coalition for Epidemic Preparedness Innovations (CEPI) and WHO, COVAX has entered into agreements with nine pharmaceutical manufacturers to order vaccines as soon as they are approved for use. The European Union (EU) and individual EU member states have made major contributions to this effort with around 850 million euros, followed by the Bill & Melinda Gates Foundation and other major donors. On February 18, 2021, WHO called on countries with Covid-19 vaccines not to share this vaccine supply unilaterally, but to fund the vaccine for the COVAX program to ensure fair distribution.

In addition to COVAX, there are several efforts to provide direct financial assistance to developing countries. For example, under the Joint Suspension of Debt Service Initiative (DSSI) of the World Bank and the International Monetary Fund (IMF), 73 developing countries have been allowed to postpone debt payments until June 2021; The World Bank (WB) has given 160 billion USD to its client countries to increase their access to a Covid-19 vaccine [12].

Vaccines offer an opportunity to end the pandemic. However, vaccines are only really effective when the international community and pharmaceutical companies implement the problem of fair vaccine distribution in 2021. This is a big challenge when the current demand for vaccines can still be supply is exceeded.

The race to Covid-19 vaccination

On 28 October 2021, 49% of the world's population has received at least one dose of Covid-19 vaccine. According to statistics, there have been 6.94 billion doses of vaccines used globally and 23.67 million doses are being used every day. However, in low-income countries, only 3.1% of people have received at least one dose of the vaccine. According to the statistics in Figure 1 below, the United Arab Emirates (UAE) leads

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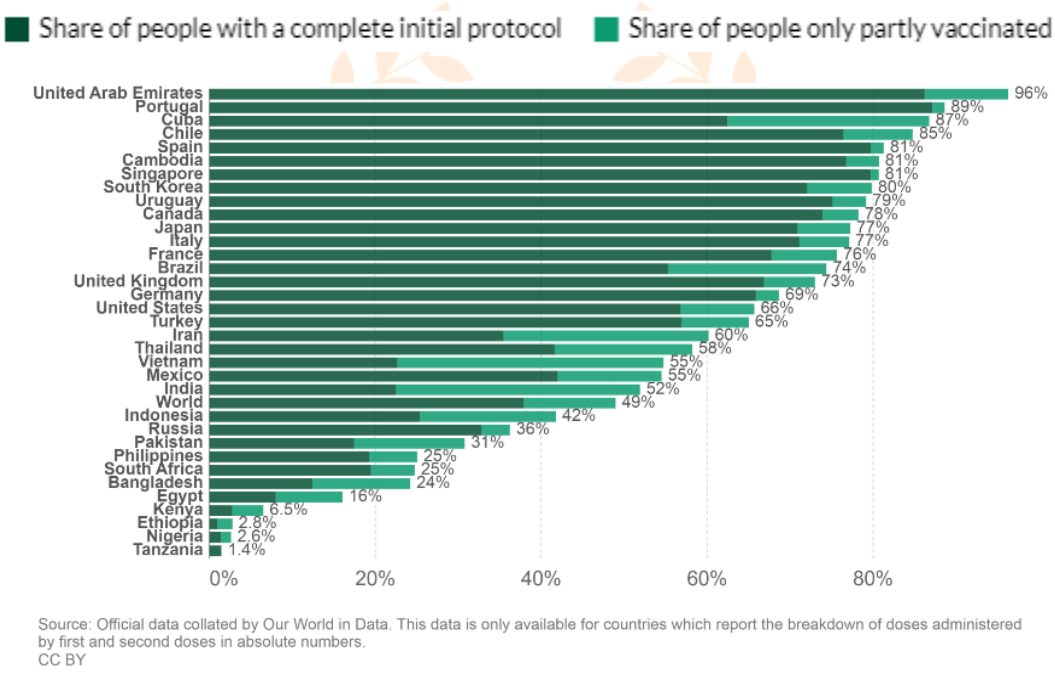
in the number of people being vaccinated with at least 1 vaccine to prevent Covid-19 with a rate of up to 96% and ranked first in the list of people who have been vaccinated with 2 doses (accounting for 86% of the population). Portugal is the second country in terms of the number of people who have been vaccinated with 2 doses of Covid-19 vaccine (accounting for 87.5%), and ranked 2nd in the number of people who have been vaccinated with at least 1 dose (accounting for 89 %). Meanwhile, some countries in the African region have very low vaccination rates: Tanzania is the country with the lowest rate of people being vaccinated against Covid-19 with 1.4% of people being vaccinated, Nigeria with only 2.6%, and Ethiopia with 2.8%.

Figure 1: Rate of vaccination against Covid-19 in the world

(as of October 27, 2021)



It can be seen that there is a paradox in the speed of universal vaccination in countries. The high number of infections can push governments to speed up the vaccination process, however, there are some countries, although the number of infections is not much compared to other countries, but have the economic potential and spending for vaccination. With more health care, these countries may have more advantages in mass vaccination campaigns (UAE, Portugal). On the contrary, these characteristics can be detrimental to some countries with low income, large populations and very high number of infections (India has only 52% of the population who have had at least 1 vaccination).

The economic - political and scientific - technological strengths bring great advantages in the race against COVID-19, especially in accessing the vaccine supply [3]. The current leading vaccines are all developed in major countries, such as the United States, and European countries such as Germany, Britain, and Sweden. These

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are the countries with the most developed economies in the world.

Moreover, according to data in 2018, spending on health in these countries is much higher than in other countries. This is a great advantage in the current situation of scarce vaccine supply because even in developed countries are unlikely to receive the required number of doses of vaccine. Recently, the European Commission is preparing legal documents to sue AstraZeneca Company, which develops and distributes the Oxford-AstraZeneca vaccine, due to not provide enough doses of the vaccine. The lack of a vaccine source is not the only reason for slowing down the process of vacination. Doubts about effectiveness and concerns about side effects are also factors that cause many people to refuse vaccination.

Vietnam's participation in the Covid-19 vaccine race

Vietnam's Covid-19 vaccine production

In the face of the complicated and unpredictable situation of the Covid-19 epidemic, which seriously threatened people's lives and health and directly affected many aspects of life. Due to limitation of the supply of vaccines has significantly affected the progress of vaccination. Therefore, to create herd immunity and soon return to the new normal, vaccine autonomy was an extremely necessary mission. From the beginning of the Covid-19 epidemic, Vietnam has actively researched to find a vaccine to prevent Covid-19 as quickly as possible.

In the race to research and develop a Covid-19 vaccine, from March 2020, the Ministry of Health of Vietnam has surveyed the readiness of domestic vaccine production units to propose research plans, production of vaccines against Covid-19. Vietnam has 4 manufacturers that are researching COVID-19 vaccines in different technological directions: No. 1 Vaccines and Biologicals Technology Company Limited (VABIOTECH), Institute of Vaccines and Medical Biologicals (IVAC), Center for Research and Production of Vaccines and Medical Biologicals (POLYVAC), and NANOGEN Pharmaceutical Biotechnology Joint Stock Company. With the consultation of the WHO and domestic experts, the Ministry of Health of Vietnam stated that the period of time for researching a Covid-19 vaccine can shorten the time by 50%.

Regarding the progress of clinical trials of a "Made in Vietnam" Covid-19 vaccine, Vietnam strived to have at least one domestically produced Covid-19 vaccine successfully in 2021. Specific information about the vaccine was expected in 2021, the Nano Covax vaccine (by Nanogen) was in phase 3 clinical trials and COVIVAC (phase 2 clinical trials).

On July 14, 2021, Nano Covax has been injected with 1st dose for 14,000 volunteers (1st injection for 13,000 people, 2nd injection for the first 1,000 people), confirmed to be safe. However, the effect of this vaccine needs more time to test (the time during which the injector can be protected after the injection is sufficient as recommended by the manufacturer).

In addition to Nano Covax, there are four other Covid-19 vaccines being researched and developed by Vietnam, with initial results already showing. In which, 2 vaccines are researched and developed by Vietnam (Nano Covax and Covivac); 2 vaccines are technology-transferred from abroad (VBC-COV19-154 and Recombinant SARS-CoV-2 Spike Protein) and one is processed and packaged in Vietnam (COVID-19 vaccine Sputnik V).

Criticle Assessments of Covid-19 vaccination in Vietnam

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Compared to other countries, Vietnam started to conduct Covid-19 vaccination later. The cautiousness with new vaccines, in addition, to ensure the safety of the vaccinated people, the vaccination venues are also more cautious, even though no dose of the vaccine is wasted due to the expiration date. These are difficult problems for Vietnam in the global vaccine race.

As of October 22, 2021, more than 71 million doses of Covid-19 vaccine have been administered to people nationwide. The rate of injecting at least 1 dose of vaccine was about 70% and the rate of injecting 2 full doses of vaccine was more than 27% of the population from the age of 18 [5]. The implementation of vaccination was carried out according to a campaign focusing first on the fields most at risk of infection and the key areas of the Covid epidemic. In these areas, the rate of having at least 1 injection was high over 95% such as Ho Chi Minh City, Hanoi, Binh Duong, Dong Nai, Long An, Khanh Hoa, Da Nang, Ba Ria - Vung Tau, Quang Ninh... Provinces and cities with the rate of 2 injections for people from the age of 18 reaching over 50% are Long An (85.3%), Ho Chi Minh City (76.8%), Quang Ninh (63.7%), Hanoi (53.7%) and Binh Duong (56.6%) [6].

From the 14th to 20th of October, Vietnam have finished 9.7 million doses injection of vaccine (an increase of 2.9 million compared to the previous week), mainly in four regions: An Giang (380,000 doses), Ninh Binh (360,000 doses), Vinh Long (350,000 doses), Binh Duong (340,000 doses), Can Tho (313,000 doses), Tien Giang (303,000 doses), Phu Tho (295,000 doses) [6].

Inspite of the slow vaccination, the number of infections and deaths cases in Vietnam was still much lower than many other countries in the region, with 873,901 thousand infections cases and 21,416 thousand deaths cases (calculated) counting to October 21, 2021. Although the epidemic broke out again in mid-2021 especially in the Southern provinces, the situation has been relatively under control due to the rapid, timely and drastic actions of the Vietnamese Government, along with the cooperation and support of the people with the requirements of Covid-19 prevention and control that the Government has put forward, as well as agencies at different levels. Looking at the total amount of money that the Covid-19 Vaccine Fund of Vietnam has raised, as of October 21, 2012, 8,784.4 billion VND has been raised.

On May 31, 2021, the Vietnamese Government continued to focus on Vietnam's vaccine strategy, which was to continue to need a diverse vaccine supply, accelerate vaccine research and found ways to receive vaccine technology transfer from other countries. Regarding the actual implementation, many creative and effective ways to reduce Covid-19 infection such as mobile medical station model; treatment stratification according to the model of "3-storey tower"; treatment of F0 cases at home; rice ATMs, oxygen ATMs, free ambulances [8]; The newborn care center for mothers infected with COVID-19 has been applied by the authorities and people in localities and regions with Covid-19 epidemics, and has achieved many practical results.

As of March 17, 2022, around 76.6 million people in Vietnam were fully vaccinated against the coronavirus (COVID-19). At the same time, a further 2.6 million people received one shot of the COVID-19 vaccines. The country is currently accelerating the vaccination rate to deal with the ongoing outbreak of the pandemic [7].

CONCLUSION

The race for a vaccine against Covid-19 is still going strong around the world. The race to produce and supply vaccines is currently still a competition between

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the countries with economic potential and developed medical science. It is also a political and strategic race. Meanwhile, the race to vaccinate against Covid-19 shows unequal aspects of the rich-poor gap between developed and developing countries and poor countries. Vietnam is also making efforts to research and produce the best vaccine to ensure proactive supply in this tough battle with the Covid-19 pandemic. The achievements that Vietnam has been winning in the fight against the covid-19 pandemic have shown the consensus of the people and the Government all the time.

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