

COVID- 19: An overview and detailed analysis about Covishield side effects after vaccination

Mahee Garg, Kashish Noor, Monika Garg
Garg Pathology Lab, Meerut (UP) India.

Article Info

Article history:

Received 13 January 2021

Received in revised form

28 May 2021

Accepted 5 June 2021

Available online 15

June 2021

Keywords: Covid-19,
symptoms, prevention,
Vaccine, covishield.

Abstract: Covid-19 is a pandemic disease, because of this dangerous illness many people lost their lives, it started in December 2019 and continues till now, this illness is transmitted through contact and through the air by the airdrop of sneezing and coughing. This disease spread worldwide, that's why scientists of all countries were trying to discover the vaccine to stop coronavirus and fight against this disease, today a total of eleven vaccines are approved by WHO and the National Regulatory authority for public use, throughout the world mainly Covaxin and Covishield are used for vaccination (vaccines are liquid substances that inject into the body and start stimulation and the body produces antibodies against the virus and protects us from viral disease). According to WHO two doses of Vaccines are necessary for every person. In this research article, will be providing a detailed analysis of all the symptoms and side effects after receiving both doses of the vaccinations. For this research article, have taken more than 100 responses into consideration and provided a descriptive analysis about the side effects including but not limited to fever, pain, chills, pain at the site of injection, etc, in our survey each person is vaccinated with Covishield because it is safe and effective according to WHO. In this research article, discussing covid-19, Vaccines for Coronavirus, vaccine type, side effects of vaccines, because without this information will not understand the need and process of vaccination, however, our main aim of this research is making the general public aware of the symptoms and other possible discomforts that they might face after being vaccinated as well as giving them a general idea of this disease that has recently forced us all to have a national lockdown.

1. Introduction

Coronavirus is a highly contagious viral disease that was the first outbreak in Wuhan, China in December 2019 that's why it is known as Covid-19 [1]. It is a Very dangerous respiratory illness and can be transmitted from one human to another. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV- 2) is the causative agent of coronavirus, it is the member of the subfamily Coronaviridae and Nidovirales [2-5]. It is a single-stranded positive-sense RNA with nucleoprotein within a capsid comprising matrix proteins, it contains nucleocapsid and spikes, that help the virus in the attachment of the host cell and spreading infection inside the host. It spreads by contact and by the droplet of sneezing and coughing [6-10]. Some years ago, the history of virus illness told us that all types of viruses disease had dangerous effects on the population. In 2002 and 2003 SARS- CoV spread the infection among the people and in 2012 MERS- CoV spread contamination and infection in the population. Coronavirus has the ability to mutate, and change their features from time to time. Some mutant variants are: Alpha CoV was reported in the UK in December 2020 [11-15]. Beta CoV was identified in South Africa in December 2020. Gamma CoV was pointed out in Brazil in January 2021. Delta CoV was identified in India in December 2020 [16-20]. The whole world was affected by this tiny disease-causing agent, WHO declared a global health emergency at the end of Jan 2020 because of this small virus, it created disturbance all over the world [21-25]. Because of this pandemic, people are suffering from many financial issues, because of the shutdown. This pandemic had a bad influence on the global economy [26]. Around 113 million cases are in all over the world and nearly 2.5 million people lost their lives due to corona, and 63 million patients are recovered [1, 25, 27].

2. Symptoms of covid-19 [2]

- 1) Dry cough
- 2) Fatigue
- 3) Headache
- 4) Fever
- 5) Difficult in breathing
- 6) Tiredness
- 7) Loss of smell
- 8) Loss of taste
- 9) Muscle and body ache
- 10) Vomiting

11) Respiratory failure

12) Lungs infection

13) Death.

2.1 Transmission of Covid-19

-SARS- CoV is spread by infectious droplets of ill people, through sneezing, speaking, and coughing.

-It is also spread by touching and face-to-face exposure.

- Covid-19 is also present in the air for some minutes, by inhalation it enters the body and spreads infection.

- This virus can live on the surface of plastic for 1-2 days, and spread infection [26].

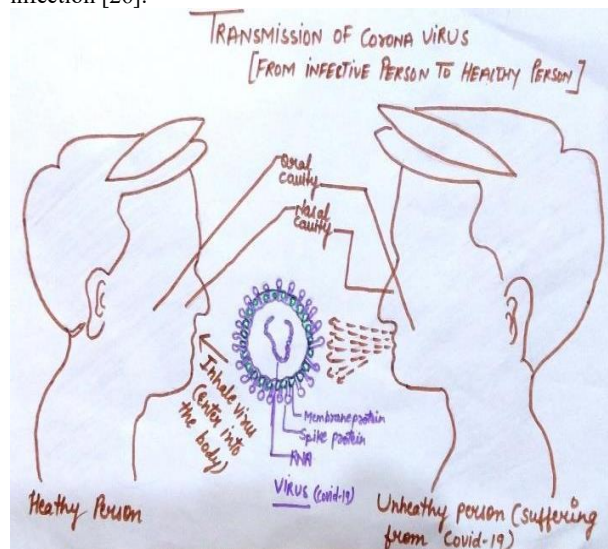


Fig.1: Transmission of coronavirus disease

3. Detection of Covid-19

Covid-19 can be detected mainly by these techniques:-

-Through RT- PCR Technique

-By antibody test

-By CT scan.

3.1. Prevention of covid-19

- Wearing masks in public places

- Drink hot water

- Washing hands

- Use sanitizer

- Avoid contact with ill people

- Keeping distance from others

Corresponding Author,

E-mail address: gargmahee2007@gmail.com

All rights reserved: <http://www.ijari.org>

- Stay at home [3-4]

3.2 Total cases and death due to covid-19 till March 2021

Total cases in the world- 112,553,181

Total death in the world- 2,497,406

Total recovered cases in the world- 63,504,599[1].

Total cases in India- 11,030,176

Total death in India- 156,567

Recover cases in India- 10,726,702[5].

4. Vaccine

A vaccine is a substance that is made with the killed fragment of disease-causing agent and synthetic material. It provides active acquired immunity to the patient and gives the power to fight against the illness. The vaccine was firstly discovered by Edward Jenner in 1796 he used the cowpox virus for preparing a vaccine against the smallpox virus, the term vaccine was taken from this discovery because the word vaccine was made up of the Latin word Vacca, which means cow. Vaccines protect against illness and boost immunity. There are many types of vaccines:-

-Killed or inactivated vaccine

-Live attenuated vaccine

-Toxoids

-Conjugate vaccine

-DNA vaccine

-Live recombinant vaccine

-Subunit vaccine[6].

4.1 Killed or Inactivated Vaccine

Inactivated vaccines are manufactured by killed organisms, organisms are killed by radiation, heat or some type of chemical. This type of vaccine is absolutely safe for every age person because during its manufacturing the pathogenesis or infection causing activity of microorganisms is inactivated. These are very lightening vaccines that's why it's repeated doses are given for boosting the immune system. Examples of inactivated vaccines- Influenza vaccine, Rabies vaccine, Hepatitis A virus vaccine [16].

4.2 Live Attenuated Vaccine

These vaccines are made with live microbes, but after weakened pathogens power, that is why these vaccines easily interact with the body immune system after injection and rapidly provide immunity against pathogens. Live attenuated vaccines provide immunity for a long period. Examples of live attenuated vaccines- yellow fever vaccine, smallpox vaccine [17].

4.3 Toxoid

Toxoids are the toxins that are produced by bacteria, it is a chemical substance or enzyme that is used for the manufacturing of vaccines. After inserting in the body it helps form antibodies against illness and provides strong immunity power [18].

4.4. Live Recombinant Vaccine

These vaccines are prepared by recombinant DNA technology technique, with the genes of microorganisms. After an insert into the body, the genes of the microbe secrete proteins and other chemicals into the human body and provide long-lasting immunity power to the body against pathogens [19].

4.5 Subunit Vaccine

Subunit vaccines are different from other vaccines because, at the time of manufacturing of Subunit vaccines, only some particular part is taken from microbes instead of the entire organism. These vaccines are very specific and too safe, they can not create any harmful effects in the body after insertion [20].

5 Vaccine development or formation

Additives of vaccine

1) Antigen:- firstly taken antigen which generates immune response antigen must be in an inactivated form

2) Stabilizer:- Take sugars, proteins, and amino acids as stabilizers because they help in controlling the chemical reactions occurring in the vaccine.

3) Preservatives:- help to control contamination in the vaccine.

4) Diluent:- It is used for the dilution of vaccines.

5) Residuals and Adjuvants are also used for the preparation of vaccines [7].

The development of a vaccine is a very risky and costly task, in this process excessive knowledge is required because when the vaccine is ready for trial, the trial is complete in three phases.

1) Vaccines are given to the 20-30 strong healthy and young volunteers.

2) Then in the second phase, the vaccine is given to 200 to 300 individuals and then starts observation.

3) In the third phase vaccine is given to 2000 to 3000 individuals and after some days when the result is come scientists observe the details and check the health issues if the vaccine has no harmful side effects then the government decides to approve this vaccine and scientists start to prepare a vaccine in bulk quantity by the process of scale-up, to giving all the peoples like ordinary peoples and others [7].

The vaccine can protect against coronavirus, and help to control the transmission of this lethal disease because when the vaccine will enter an individual body, the body recognizes it as a foreign particle and starts producing antibodies. According to reports, nearly 66 vaccine nominees are in clinical research for trial, now nearly ten-eleven vaccines are approved by the National Regulatory authority for public use, some are - Covaxin, Pfizer- BioNTech vaccine, AstraZeneca vaccine, EpiVacCorona, Johnson & Johnson vaccine [8-9].

5.1 Covaxin

Covaxin is a homegrown vaccine, it is the first vaccine manufactured in India. The pharma company Bharat Biotech created the covaxin. The other name of covaxin is BBV152. It is manufactured with the inactive microorganism, because of protection purposes. The inactivated or killed strain of the virus was given by ICMR and the National Institute of Virology in May 2020, after 6 months in December 2020 the vaccine was available publicly. This vaccine is reliable and provides immunity against coronavirus [10,24].

5.1 Pfizer- BioNTech Covid-19 vaccine

This vaccine is an m- RNA-based vaccine, it is effective against coronavirus, its clinical trials started in April 2020. The code name of the Pfizer- BioNTech vaccine is BNT162b2.

5.3 Johnson & Johnson vaccine

Johnson and Johnson's vaccine is good in protecting from coronavirus and it is a very effective vaccine and provides immunity after one single dose of vaccination [23].

5.4 Covishield

Covishield is manufactured by Oxford University, UK, through the Vaccitech company. It is a viral vector vaccine. Its full name is Oxford- AstraZeneca Covid-19 Vaccine and its codename is AZD1222. In India, covishield is developed by the Serum Institute of India with the help of AstraZeneca UK. This Vaccine is Adenovirus based, which spreads infection in chimpanzees. It is a recombinant replication-deficient chimpanzee adenovirus vector encoding the SARS- CoV-2 spike glycoprotein.

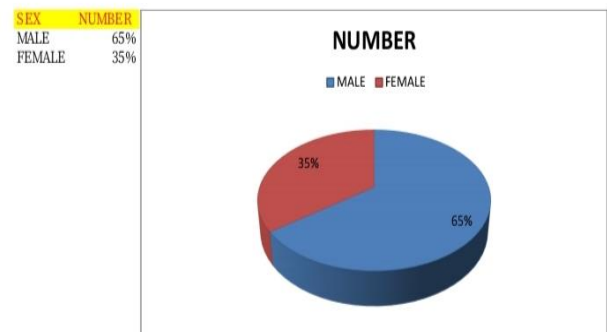


Fig.2: Sex ratio (Male- 65%, Female- 35%)

When this vaccine enters the individual's body, it stimulates the immune system to attack the SARS- CoV- 2 viruses, and after stimulation, the cells of the immune system activate and start

developing antibodies against the coronavirus. It is given 0.5 ml by injecting it into the muscle. It is an intramuscular injection that is given or inserted on the upper arm. This Vaccine is super effective. Two doses are given to everybody for providing protection against coronavirus. The other name of covishield is- chAdOx1-S, Covid-19 Vaccine AstraZeneca [11-14, 21 -22].

This research article discussed coronavirus in detail, now the post-vaccination side effects of covishield vaccine. Survey to know how much people face trouble and pain after vaccination and what types of side effects they face. In our survey all people got vaccinated with covishield vaccine. This survey is done with 100 people who got vaccines. Forms to fill their details of vaccination and type of side effects what they felt, and then observe them and concluded the percentage of symptoms people face, sex ratio, and many other points.

Table 1: Symptoms and percentages

Symptoms	Percentage (%)
Fever	88.37
Swelling	2.32
Headache	4.65
No Symptoms	11.62
Itching	2.32
Dizziness	2.32
Chills	2.32
Pain at the site of injection	9.3

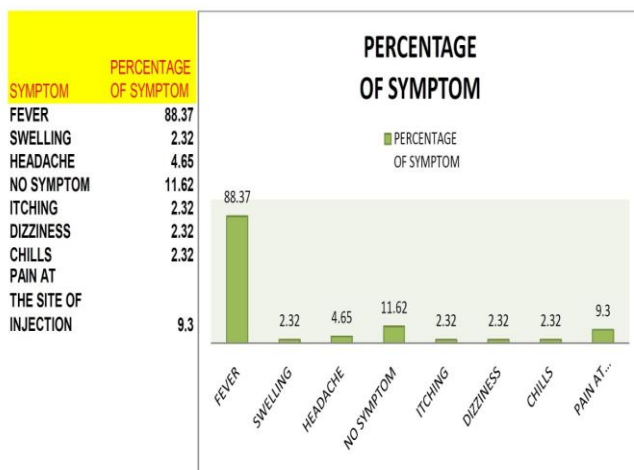


Fig. 3: Percentage of symptom

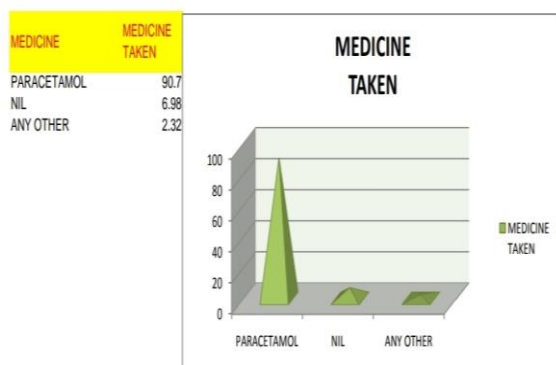


Fig. 4: Medicine has taken- After Vaccination how many people's take a painkiller

5.5 Side effects of the vaccine, analyzed after vaccination

- Fever
- Vomiting
- Body ache
- Muscle pain

- Tiredness
- Headache
- Nausea
- Itching
- Swollen
- Lymph nodes
- Pain at the site of injection.

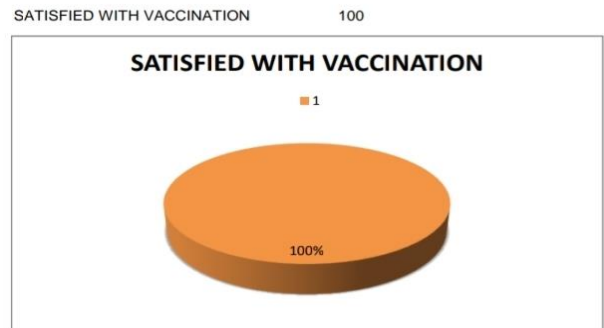


Fig. 5: People satisfied with vaccination

6. Conclusions

Undoubtedly corona is a very dangerous illness and the whole world is affected by this harmful disease. There is only one helpful prevention of covid-19 that is vaccination because when get the vaccine, our body produces an antibody that helps in recognition of a covid virus and kills it. In this research article, discuss covid-19, its symptoms, prevention, manufacturing of vaccines, side effects of vaccines. In this article, mainly focus on the side effects of vaccine after vaccination and did a survey about this important topic in this survey included approximately 100 peoples and after the survey, concluded that there is sex ratio is 65:35 that means in 100 people 65% are male and 35% are female that means males are aware in comparison to female. After vaccination, many side effects occurred in people and they suffered for 5 to 10 days after vaccination with the symptoms, many people suffered from fever (approximately 88.31%), some people face swelling at the site of injection (2.32%), various people suffer from headache (4.65%), few people irritate with itching (2.32%), few people feels chills (2.32%), various people feel pain at the site of injection (9.3%), and around (11.62%) percent people feel no symptoms or no side effects after vaccination. Of the people who felt any above side effects after taking the vaccine approximately 90.7% of people take paracetamol to free themselves from pain and 2.32% people take any other painkiller and all 100% of people are satisfied with this vaccine and vaccination process. Some people take antibody tests for testing of IgM level and IgG level, the IgM level of one patient is 0.20, the IgG level of this patient is 7.60 and she is also satisfied with the test. Randomly observe some patients after one dose of vaccination and after the second dose of vaccination, the antibody level is good after taking the second dose of the vaccination. Following the above survey, that vaccination is necessary for every person to prevent this severe corona disease and at the time of vaccination or after vaccination people suffer from little bit pain but they will prevent this dangerous disease throughout their lifetime.

References

- COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU).
- <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>
- Recommendation Regarding the Use of Cloth Face Coverings, Especially in Areas of Significant Community-Based Transmission.
- Centers for Disease Control and Prevention (5 April 2020). What to Do if You Are Sick. U.S. Centers for Disease Control and Prevention (CDC). Archived from the original on 14 February 2020.
- COVID-19 India. Ministry of Health and Family Welfare (India) 24 February 2021.

- [6]. <https://www.britannica.com/science/vaccine>
- [7]. World health organization <https://www.who.int/news-room/feature-stories/detail/how-are-vaccines-developed>
- [8]. COVID-19 vaccine development pipeline.
- [9]. COVID-19 vaccine development pipeline (Refresh URL to update)". Vaccine Centre, London School of Hygiene and Tropical Medicine. 18 January 2021.
- [10]. ICMR teams up with Bharat Biotech to develop Covid-19 vaccine.
- [11]. Coronavirus Vaccine Covishield: Side effects, Benefits of Serum Institute-AstraZeneca vaccination
- [12]. <https://www.zeebiz.com/india/news-coronavirus-vaccine-covishield-side-effects-benefits-of-serum-institute-astrazeneca-vaccination-145241>
- [13]. AZD1222 vaccine met primary efficacy endpoint in preventing COVID-19.
- [14]. TGA eBS - Product and Consumer Medicine Information Licence. www.ebs.tga.gov.au
- [15]. Information for Healthcare Professionals on COVID-19 Vaccine AstraZeneca
- [16]. <https://www.vaccineurope.eu/about-vaccines/types-of-vaccines>
- [17]. <https://vaccine-safety-training.org/live-attenuated-vaccines.html>
- [18]. <https://www.news-medical.net/health/What-is-a-Toxoid-Vaccine.aspx>
- [19]. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6668849/>
- [20]. <https://www.who.int/news-room/feature-stories/detail/the-race-for-a-covid-19-vaccine-explained>
- [21]. https://en.m.wikipedia.org/wiki/Oxford%E2%80%93AstraZeneca_COVID-19_vaccine
- [22]. https://en.m.wikipedia.org/wiki/United_States_National_Library_of_Medicine
- [23]. <https://nltimes.nl/2021/02/16/leiden-developed-covid-19-vaccine-submitted-ema-approval>
- [24]. <https://www.bharatbiotech.com/covaxin.html>
- [25]. <https://www.ncbi.nlm.nih.gov/books/NBK554776/>
- [26]. ZD Guo, WY Wang, SF Zhang, X Li, L Li, C Li, Y Cui, RB Fu, YZ Dong, XY Chi, MY Zhang, K Liu, C Cao, B Liu, K Zhang, YW Gao, B Lu, W Chen. Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020. Emerg Infect Dis. 26(7), 2020, 1583-1591
- [27]. FB Ahmad, JA Cisewski, A Miniño, RN Anderson. Provisional Mortality Data - United States, 2020. MMWR Morb Mortal Wkly Rep., 70(14), 2021, 519-522.