WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 11, Issue 13, 1643-1652. Research Article ISSN 2277– 7105

COVID-19 VACCINATION: A QUESTIONAIRE BASED STUDY

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Article Received on
07 August 2022,

Revised on 27 August 2022,
Accepted on 17 Sept. 2022

DOI: 10.20959/wjpr202213-25649

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ABSTRACT

COVID-19 rapidly transformed from being a serious concern that seemed to be confined to China, to a global health emergency practically overnight. Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. However, some will become seriously ill and require medical attention. Throughout the COVID-19 pandemic, several coronavirus variants have emerged as the virus, SARS-CoV-2, continues to mutate and evolve. The availability of a safe and effective COVID-19 vaccine is largely regarded as a crucial tool in the pandemic's fight. An effective vaccine against SARS-CoV-2 infection is thought to stimulate innate and adaptive immune responses, providing protection against severe forms of coronavirus illness 2019 (COVID-19). Vaccine reluctance and refusal are major concerns around the world for a variety of reasons, including religious convictions, personal opinions, and safety concerns based on widespread misinformation. The voluntary uptake of the vaccination will be aided by the dissemination of consistent information through numerous communication channels and platforms. The purpose of this work is to compile survey-based data. Survey was done to know the status of vaccinated people in the particular areas.

KEYWORDS: COVID-19, Vaccines, Vaccination drive, Survey, Covishield, Covaxin, Sputnik, questionnaire.

1. INTRODUCTION

Coronaviruses are a big family of different viruses. Novel corona-virus (nCOV) disease originated in Wuhan, China, has widely spread all across the globe, since January 2020.[1]

The pandemic of nCOV was announced as "Public Health Emergency of International Concern" by the World Health Organization (WHO) on 30 January 2020.[2]

COVID-19 rapidly transformed from being a serious concern that seemed to be confined to China, to a global health emergency practically overnight. It has subsequently spread globally to become the fifth documented pandemic since the 1918 flu pandemic.[3]

The etiologic agent of COVID-19 was isolated and identified as a novel coronavirus, initially designated as 2019-nCoV.[4]

Coronaviruses acquire their name from the spike proteins that protrude from them, giving them a crown-like appearance. These spike proteins are crucial to the virus's biology. The spike protein is the portion of the virus that hooks to a human cell and allows it to infect it, allowing it to proliferate and spread to additional cells. By targeting these spike proteins, some antibodies can protect the population from SARS-CoV-2.[5]

The International Committee on Taxonomy of Viruses' Coronavirus Study Group (CSG) determined that the virus is a variation of the coronavirus that caused an outbreak of severe acute respiratory syndrome (SARS) in 2002–03. As a result, the new pathogen was given the designation SARS-CoV-2 (severe acute respiratory syndrome-related coronavirus 2). The sickness produced by the SARS-CoV2 virus is known as COVID-19.[6]

1.1 Mechanism

All coronaviruses contain specific genes in ORF1 downstream regions that encode proteins for viral replication, nucleocapsid and spikes formation.[7] The glycoprotein spikes on the outer surface of coronaviruses are responsible for the attachment and entry of the virus to host cells.

The entry mechanism of a coronavirus depends upon cellular proteases which include, human airway trypsin-like protease (HAT), cathepsins and transmembrane protease serine 2 (TMPRSS2) that split the spike protein and establish further penetration changes.[8,9] SARS-CoV-2 possesses the typical coronavirus structure with spike protein and also expressed other polyproteins, nucleoproteins, and membrane proteins, such as RNA polymerase, 3-chymotrypsin-like protease, papain-like protease, helicase, glycoprotein, and accessory proteins.[10,11]

1.2 Treatment

Rapid and sensitive virus detection technologies are critical for limiting COVID-19 outbreaks.[12] Furthermore, the most efficient strategy to prevent the pandemic is to interrupt the chain of transmission from diseased to healthy persons, which necessitates detection and isolation.

To lower the viral load, interferon-a nebulization, broad-spectrum antibiotics, and antiviral medications were initially employed.[13-15] The release of the COVID-19 vaccine represents a significant step toward slowing the pandemic's spread and reducing sickness and deaths. The launch of the COVID-19 vaccine is the world's largest vaccination campaign, and its rollout necessitates extensive planning at multiple levels.

1.3 Variants

Viruses constantly change through mutation and sometimes these mutations result in a new variant of the virus. Some variants emerge and disappear while others persist. New variants will continue to emerge.

Scientists around the world are tracking changes in the virus that causes COVID-19. Their research is helping experts understand whether certain COVID-19 variants spread faster than others, how they might affect your health, and how effective different vaccines might be against them.[16]

Occasionally, a strain becomes a "variant of concern" when it is able to survive better than the original virus or previous variants of concern. They can become more easily passed from one person to another than the original strain or variants. They could also become more or less likely to cause serious illness.[17]

Only seven corona viruses are known to cause disease in humans[18]

- Four human coronaviruses cause symptoms of the common cold namely, 229E, OC43, NL63 and HUK1.
- Three human coronaviruses cause much more serious infections: SARS-CoV in 2002 (severe acute respiratory syndrome or "SARS"), MERS-CoV in 2012 (Middle East respiratory syndrome or "MERS"), and SARS-CoV2 (the current pandemic known as COVID-19).

1.3.1 Variants of Concern

Since late 2020, there have been a number of variants that circulated widely in the United States, including Alpha, Gamma and Beta. By late 2021, the two most significant variants are Delta and Omicron.[17]

Beta: The COVID-19 variant that was first detected in South Africa. Beta spreads more readily than previous variants. And like gamma, neutralizing antibodies are less effective against the beta variant.[19]

Gamma: The COVID-19 variant that was first detected in Brazil. This variant is more resistant to treatment, including certain monoclonal antibody medications and antibodies generated by previous COVID-19 infection or vaccination.[19]

Delta: The COVID-19 variant that was first detected in India. Delta is regarded as the most contagious form of the SARS-CoV-2 coronavirus so far. People infected with the Delta variant, including fully vaccinated people with symptomatic breakthrough infections, can transmit the virus to others.[20]

Omicron: The COVID-19 variant that was first detected in South Africa (possibly first in Western Europe). The presence and severity of symptoms can be affected by COVID-19 vaccination status, the presence of other health conditions, age, and history of prior infection.[21]

1.4 Largest vaccination drive

National regulatory authorities have granted emergency use authorizations for thirty COVID-19 vaccines.[22]

Eight vaccines have been approved for emergency or full use by atleast one stringent regulatory authority recognized by the World Health Organization (WHO): Pfizer-BioNTech, Oxford- AstraZeneca, Sinopharm BIBP, Moderna, Janssen, CoronaVac, Covaxin and Novavax.

Specific versions of five vaccines have been authorised by the European Medicines Agency (EMA): Pfizer–BioNTech, Janssen, Novavax, Moderna and Oxford–AstraZeneca.[23] Specific versions of another four vaccines are under evaluation by the EMA: Sputnik-V, CoronaVac, Sanofi–GSK and Valneva.[24]

The pandemic has wreaked havoc on practically every aspect of life, stalling global economies and altering the way we work. COVID-19 vaccine is now available as an option to exit this stage of the pandemic. Currently, seven COVID-19 vaccines have been licenced and are being distributed over the world across three platforms. However, some question the efficacy of these vaccines, especially given the emergence of new strains of the virus. Vaccines must be effective at significantly reducing the spread of the virus for them to be successful. There has been uncertainty as to whether the current vaccines will protect against these variants. Although vaccines afford very high protection, infection with the delta and other variants remain possible.

We found many factors contribute to this trend, with uncertainty and the rapid transfer of information leading to the refusal of vaccination by families and individuals. Conveying consistent information through multiple communication channels and platforms will help in uptake of the vaccine voluntarily. It is also important to make people understand the phase-wise introduction approach for prioritization of the target beneficiaries. Hence vaccine communication is of utmost importance at every stage of the roll out of the COVID-19 vaccine.

Looking further into vaccine hesitancy, we identified some of the common factors contributing to this trend, including knowledge and information sources, lack of experience with vaccine-preventable diseases, the role of recommendations by health professionals, social norms, and parental responsibility, trust, and religious beliefs.[25]

The present paper is the compilation of survey-based data. The data is particularly taken from the areas of Haryana such as Faridabad, Ballabgarh, Palwal, Kosi.

2. METHODOLOGY

India's COVID-19 vaccination coverage has crossed **2,08,57,15,251** till date. More than **1.38 Crore (1,38,82,262)** Precaution Doses for the identified categories of beneficiaries (HCWs, FLWs and Over 60 years) for COVID vaccination have been administered so far.[26]

A web-based survey was distributed among students and shared on the social platform among the population in some areas of Haryana. Data analysis was performed using Microsoft Excel and graphical representations were prepared.

3. RESULT AND DISCUSSION

During the first wave of the pandemic, governments of many countries worldwide imposed immigration, restrictions, quarantine, contact tracing and several behavioral restrictions such as lockdown of cities, social distancing and closure of educational institutes, schools and commercial facilities totally under restrictions struggling with no treatment or escape after getting infected.

Then, during 2nd wave, vaccines have been widely considered as part of the exit strategy to enable the return to previous patterns of working, schooling and socializing.

Survey was done in areas such as Faridabad, Ballabgarh, Palwal, Kosi to know the status of vaccinated people. From ***Figure 1,*** it was spotted that 83% of the population was vaccinated and around 17% were unvaccinated. As different new variants are reporting time to time, again survey was done, after 3 months when a new strain Omicron was reported. It was shown in ***Figure 2*** that 92.5% of the population were vaccinated and 7.5% were remaining which is better statics in comparison to earlier survey.

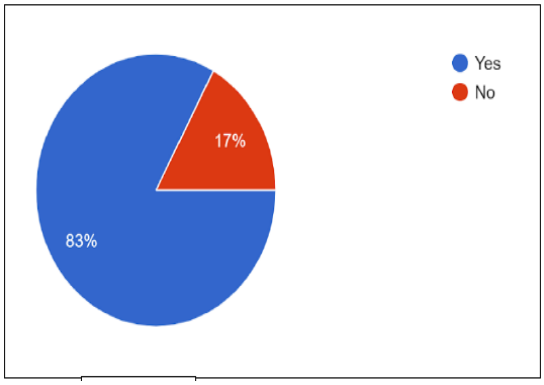

Figure 1

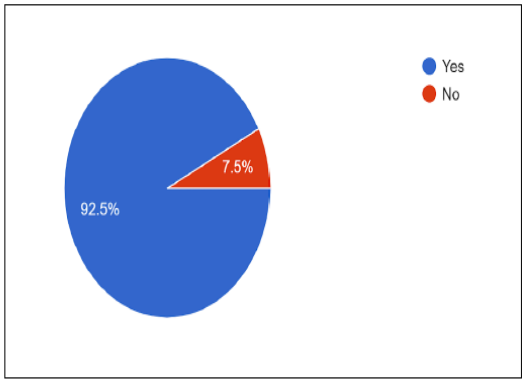

Figure 2

India has already approved seven vaccines. It is currently using only three - Covishield, Covaxin by Indian firm Bharat Biotech and Sputnik V - for its vaccination drive. The Government of India has amended the vaccination policy by waiving the preregistration requirement and offering free vaccinations to accelerate the programme.

Figure 3. Indicates that around 70% of people got vaccinated by the vaccine named Covishield. 12% of the remaining population was vaccinated by Covaxin and Sputnik-V immunization which has a less impact on the people. It was also found that about 17% of the people are still not got vaccinated by any one the available vaccine whereas ***Figure 4*** shows

statics of preferred vaccine after 3 months. It was observed that 55.8% people were preferring Covishield and 38.3% of the people were vaccinated by Covaxin. None of the population in particular area preferred Sputnik-V due to its high cost and unavailability in the free vaccination drive.

The pie chart also figures out that still some percentage of the population is not vaccinated with any of the available vaccine.

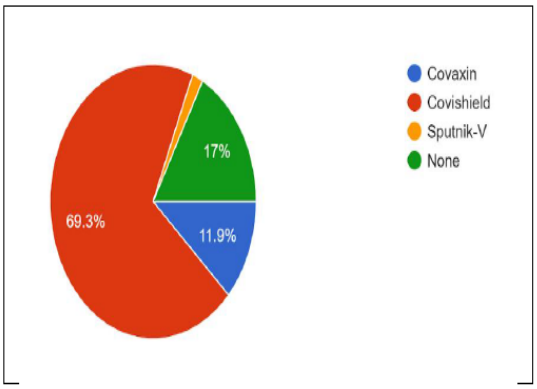

Figure 3

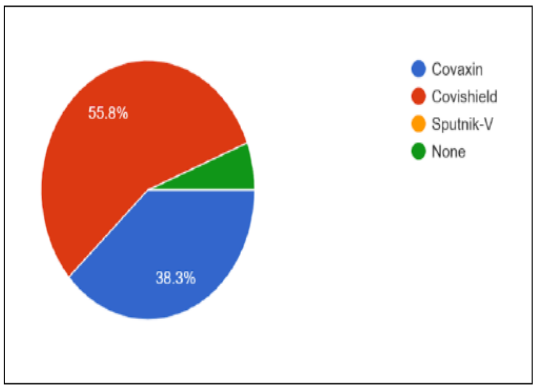

Figure 4

Survey questions also include why different people would decline the thought of getting vaccinated. ***Figure 5 and 6.*** illustrates that the percentage of the population still left to get vaccinated have their own reasons like:

- Vaccine is not available.
- They are scared that they will get the infection if they do so.
- They are already exposed to Covid-19 virus. That's why they don't need it.
- Some believe that they are young and healthy, and they don't need any vaccine.
- The findings show that some people don't want to get vaccinated for no reason.

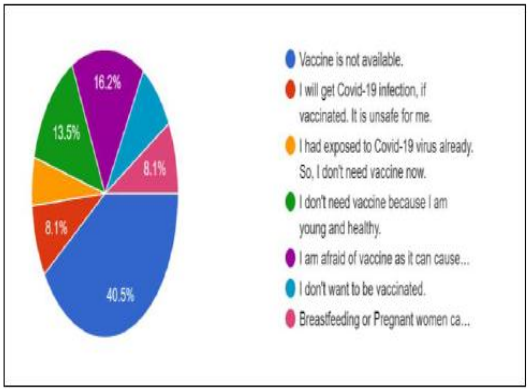

Figure 5

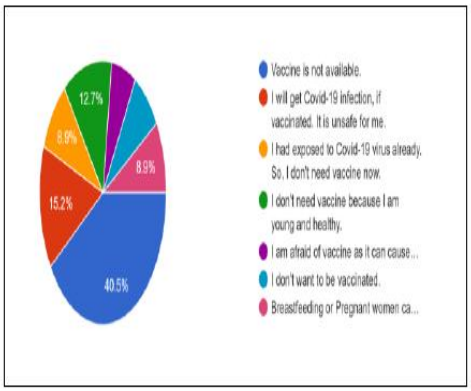

Figure 6

Since the beginning of the COVID-19 pandemic, the SARS-CoV-2 coronavirus that causes COVID-19 has mutated, resulting in different variants of the virus.

The new variants raise questions: Are people more at risk for getting sick? Will the COVID-19 vaccines still work?

In questionnaire, which was done after 3 months, it was also asked that how many people who were fully vaccinated but still got infected by Covid-19. From the above quoted data as shown in ***Figure 7***, it was extracted that 72.8% got infected with Covid-19 but the symptoms were found to be mild in case of the fully vaccinated population as in ***Figure 8***.

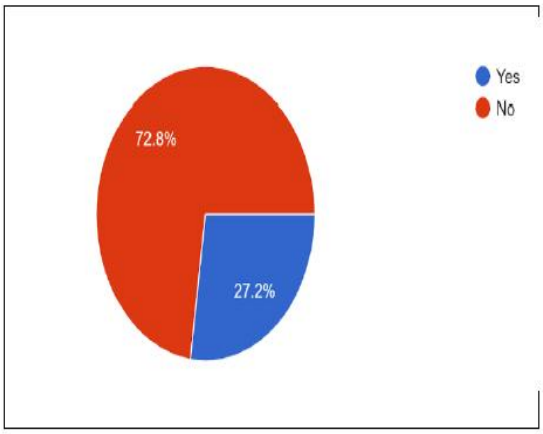

Figure 7

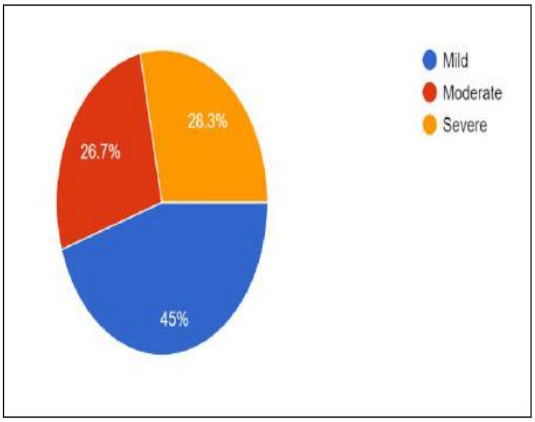

Figure 8

4. CONCLUSION

Studies show that all COVID-19 vaccines work very well at keeping people away from getting infected. They also seem to work against the new variants.

The present survey concludes that more the infected and unvaccinated people, more will be the chances for mutations to occur. Limiting the spread of the virus through maintaining COVID-19 safeguards (mask wearing, physical distancing, practicing hand hygiene and getting vaccinated) gives the virus fewer chances to change. It also reduces the spread of more infectious variants if they do occur.

Emerging evidence shows that getting a COVID-19 vaccine after you recover from COVID-19 infection provides added protection to your immune system. Receiving any COVID-19 vaccine is better than being unvaccinated. Widespread vaccination is a critical tool to help stop the pandemic.

5. ACKNOWLEDGEMENT

The authors acknowledge the support received from the Advanced Institute of Pharmacy (AIP) for their encouragement in carrying out this survey work.

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