



INTERNATIONAL RESEARCH JOURNAL OF HUMANITIES AND INTERDISCIPLINARY STUDIES

(Peer-reviewed, Refereed, Indexed & Open Access Journal)

DOI : 03.2021-11278686

ISSN : 2582-8568

IMPACT FACTOR : 5.71 (SJIF 2021)

Survey on COVID-19 Vaccine Hesitancy amongst Indian Population

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DOI No. **03.2021-11278686**

DOI Link :: <https://doi-ds.org/doilink/01.2022-19238574/IRJHIS2201008>

Abstract:

COVID- 19 has been one of the worst nightmares for mankind. During these difficult times, vaccines have come up as a blessing for the world. While the short process of production and testing has given rise to several doubts, the effectiveness and belief in science prevail. With two conflicting schools of thought, vaccine hesitancy has been an underlying emotion. With a population of 1.2 billion, India has been able to inoculate 390 million people. The main hindrance the ruling government is facing is the hesitancy of its people amidst the rumors to get vaccinated. This study was conducted to understand the public opinion, people's mindset and the reason behind the COVID vaccine hesitancy.

For the present study, 200 respondents from main states like Gujarat, Tamil Nadu, and Maharashtra and various education backgrounds were asked to fill up an online survey form. The final results gave an insight on various rumors like vaccine leads to loss of fertility, its being a placebo associated with the vaccination process etc which indeed reflect the perception of common man towards vaccines. Along with this, the results indicate an analysis of the side effects suffered due to vaccination. Around 38% suffered headaches and 44% felt fatigued after vaccination. The study explains the lack of awareness and proper information that needs to reach everyone. Keeping in mind the vast differences in the social and cultural demography of the country, these results cannot be generalized but can be used as a guide for the development of similar studies and for taking proactive actions.

Keywords: COVID, Vaccine Hesitancy, social media, Side Effects, Rumors

Introduction:

In December 2019, the world woke up to one of the worst challenges it has faced: the COVID-19 Pandemic. Corona virus is an enveloped RNA virus that can cause infection in the upper respiratory tract of the human body. To curb the havoc it has caused, several steps by various governments have been adopted. While masking and social distancing remain as one of the most important preventions, massive efforts to ramp up vaccine production have been sought out. Several countries have tried to produce vaccines in a surprisingly shorter time with the help of better

technologies and advancements. Novel approaches like mRNA synthesis and genetic recombination remain at the base of vaccine production (Mullard, 2020). The vaccine produced by Pfizer and the Moderna works on the principle of mRNA synthesis whereas Sputnik is a two vector vaccine based on the adenovirus (Jackson, 2020).

In India, the most widely administered vaccine is Covishield (produced by Serum Institute) and Covaxin (produced by Bharat Biotech). Covaxin is an inactivated vaccine derived from a strain of SARS-CoV-2 virus isolated at the National Institute of Virology (NIV), Pune. On the other hand, Covishield uses a replication-deficient chimpanzee viral vector based on a weakened version of a common cold virus (adenovirus) that causes infections in chimpanzees and contains the genetic material of the SARS-CoV-2 virus spike protein (Sahu, 2021). Based on the data available with the Ministry of Health and Family Welfare of India, approximately 96.8 million people in India have been fully vaccinated, which is estimated for around 7.1% of the total population. While the numbers are encouraging, they aren't enough for the country to let its guard down.

The slow speed of vaccination can be attributed to vaccine hesitancy and vaccine availability. Vaccine availability is effectively targeted and the best efforts have been made to increase the production and set up vaccine centers (Danabal, 2021). Vaccine hesitancy has been difficult to overcome. It is critical to overcome the fear and plan for the acceptance of a greater population towards the vaccination. Mass vaccinations can be a key factor in determining the ability of the population to gather herd immunity. The mutation of the viral particle and unpredictable effect on the body are a few of the reasons to target for the vaccination (Troiano, 2021). According to few new reports, religious beliefs have also played a key role in the stringent beliefs against the vaccine (Kanozia, 2021). The vaccines permitted in India are under emergency approval and thereof enough research data is provided on it. The lack of scientific data and efficacy numbers has also been an important factor in fueling the hesitancy. Alternatively, there have been numerous attempts to solve doubts on vaccine hesitancy and positive reaffirmations for vaccines from the scientific community. Research is being continuously carried out with the help of molecular docking, immunoassay techniques and in-vivo studies, to confirm the effectiveness and study the effects of the vaccine (Haque, 2020) yet common man is found to be skeptic towards undertaking the shots. The present research tries to analyse the what, ifs & buts, whys of all the people who have no science background and rely on perhaps the substandard sources of information.

Objective:

This study aims to understand the factors driving vaccine hesitancy from a small group with similar demographics and characteristics. The survey has been designed keeping in mind the various tools available in India. The references and points laid out in the survey are taken from previous literature and reliable news sources.

Methodology:

A) Study Design and Data Collection:

The questionnaire form for the study was designed with the help of an online survey platform. It was circulated from 19th June 2021 to 23rd June 2021. The survey was designed in 2 different languages that is English and Gujarat after going through the literature review keeping in mind the side effects, and hesitancy study.

The age of the target population was in the range of 17-75 years. There was no gender bar in the survey and was designed keeping in mind the general population. A total of 207 responses were gathered at the end of the survey. Out of 207, 4 responses were from out of India and were removed because they did not match the targeted demographic area. The excluded respondents were mainly from the United States of America and United Arab Emirates. Subsequently, 2 responses from respondents aged 16 were also removed, as they did not match the age range of the survey.

B) Socio-Economic Demographic Profile of Respondents:

The sample obtained from the survey covered similar demographics. Out of 200 respondents, 57.5% (115/200) were female and 42.5% (85/200) were male. The majority of the respondents were from Gujarat, Maharashtra, and some parts of South India. From Gujarat, 44.57% (74/200) of the sample population belonged to Vadodara, 17.5% (35/200) to Surat, 14% (28/200) belonged to Ahmedabad and 14.5% (29/200) belonged to the Saurashtra region. Around 2% (4/200) of respondents, belonged to the states of Southern India, like Andhra Pradesh, Tamil Nadu, and 6% (12/200) from the state of Maharashtra.

The educational background of the respondents was taken into consideration to briefly understand their mindset. Out of our 200 respondents, 54.5% (109/200) had completed their graduation, while 34.5% (69/200) were postgraduates. Furthermore, around 8.5% respondents (17/200) that had education degrees above post-graduation and only 5% (10/200) had finished their high school education (till 12th Grade).

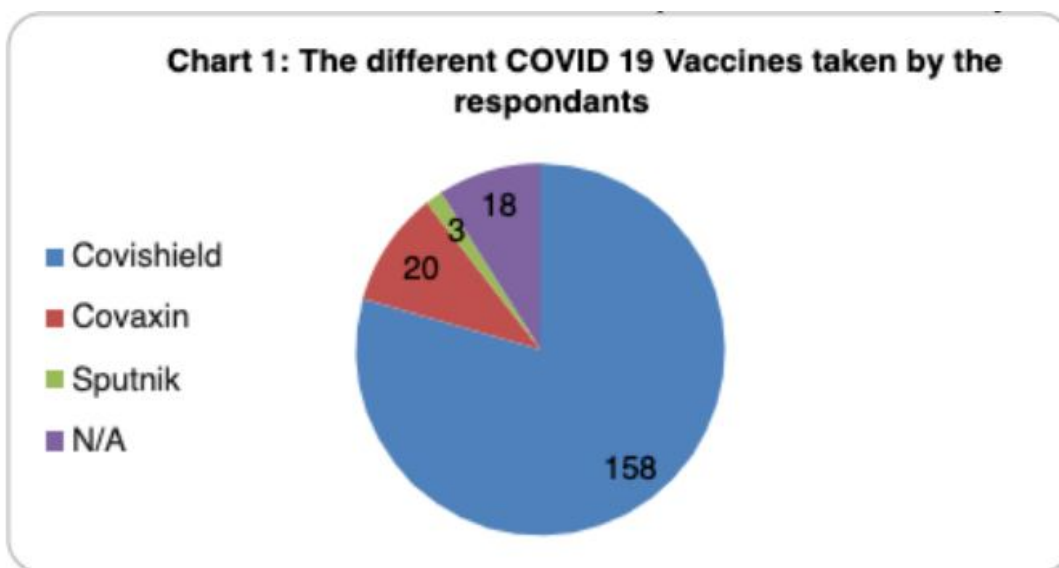
C) The Survey Tool – Online Questionnaire:

The questionnaire had 24 questions that gathered data about topics ranging from public view of vaccine hesitancy, vaccination status of the respondents, their experience with the vaccine, and their reaction to the rumors.

Results and Discussion:

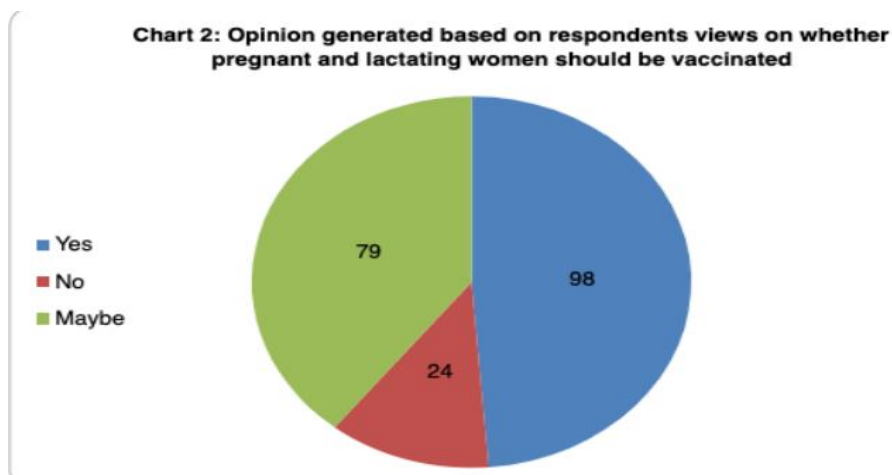
Vaccine hesitancy can be defined as reluctance of people to receive safe and available vaccine. To overcome this public health challenge an effective plan called “the 5C model of the drivers of vaccine hesitancy” which targets confidence, complacency, convenience (or constraints), risk calculation, and collective responsibility surrounding the hesitancy issue. The results obtained

during the course of this survey, aligns with the importance of these drivers of public health policy. This survey was designed with basic set of questions targeting fundamentals of hesitancy and questions around vaccination (Machingaidze et. al., 2021). During the survey, multiple questions focusing on the understanding and the belief about the vaccine were taken. Out of the 200 respondents, 99.5% (199/200) respondents agreed that everyone should be vaccinated. During the first phase of vaccination, 3 different vaccine shots were available in India, these being Covishield, Covaxin and Sputnik. The vaccine shots chosen or available to the respondents in this study are presented in Chart 1.



During the present study, these respondents were asked, which vaccine they chose to understand the attitude and make a prediction of vaccine shots available in a particular region. Out of 200 respondents, 18 respondents did not receive the vaccine because they had contracted COVID in 3 months' time or they wanted to wait for some time and look at the general effect. Also in present survey, the vaccination status of the respondents was tracked. From the 200 respondents, 37.5% (75/200) were fully vaccinated, and 48% (96/200) were partially vaccinated whereas, 9.0% (18/200) were waiting for the first dose and 4.5% (9/200) refused to reveal their vaccination status.

The senior citizens, healthcare workers and immuno-compromised citizens were one of the first groups vaccinated due to their susceptibility. Similarly, pregnant and lactating women were also one of the groups that were cause of concerns. Due to the risk of maternal complications and the possibility of the adverse outcome on fetal life (Naleway, 2006), there were dubious views on COVID vaccination for this group. Even amongst the absence of concrete research, there was a positive outlook for the vaccination of pregnant and lactating women. In the present study, the respondents were asked “If the pregnant and lactating women” should be vaccinated, and the results are indicated in the Chart 2.



Based on the result it was deduced, that even though there was lack of clarity and scientific data, people are ready to entrust the scientific research behind the vaccine backed by physicians and experts. Out of 200 respondents, 98 agreed that this group can be vaccinated and 79 of them were unsure on their stance. These results demonstrated that there is a positive attitude amidst the respondents about the affectivity and safety of vaccine. Maybe the rumors, proof, and side effects are fueling the fear among the citizens. The government must design and execute policy that can spread awareness amongst the citizen keeping in mind the scientific aspect. Similarly, these policies must also promote and boost responsible scientific communication and journalism (Rosen, 2021).

These results gave a brief overview of the mindset behind the COVID Vaccine. The results were further supplemented with views of respondents on the vaccination process. In this survey, one of the first questions was aimed at understanding why do people think that getting vaccinated is important. Around 76.5% (153/200) of the respondents believed that vaccination can help in reducing the intensity of the infection and 45% (90/200) believed that vaccination is scientifically proven and 55% (110/200) agreed that it would help in the development of herd immunity. From the results, it can be inferred that there is a positive approach towards the vaccination process. The pandemic had a deep effect on the economy and vaccines had been the only source of rescue from the nightmare. As a result, in the hope to recover economic stability, the vaccination process was encouraged which from present study seems to be quite welcoming from public side.

When inquired “Why would one avoid getting vaccinated?” 51.5% (103/200) subjects shared that vaccine is a placebo with no significant advantage and 30.5% (61/200) are under an impression that vaccine can affect fertility & impact of religious views, superstitions was found to be 23%, (46/200). Other factors, responsible for vaccine hesitancy, excluding the provided options, include rumors around adverse effects of the vaccine, and its effect on comorbidities.

There were some trends observed in opinion of respondents based on the gender. Out of 114 females, 25 (21%) did not agree that pregnant and lactating women should be vaccinated and out of

86 male respondents, only 10 (11.6%) disagreed on the same point. Similarly, there were some conflicting opinions on vaccine compulsion as well. While 99% (199/200) respondents believed that everyone should be vaccinated, 6.5% (13/200) believed that it must not be compulsory and allowed to be individual choice based on their health condition and vaccination beliefs. Respondents in support of the vaccine compulsion believed, “Vaccination is one of the most effective public health interventions in saving lives across the world during pandemic”

Side effects are a case of common immune system reactions, according to our result generated some people have suffered severe reactions to immune system. This immune reaction in a healthy individual is caused during the development of antibodies against the introduced antigen. The antigen, in this case the COVID Viral Particle enters the body which subsequently leads to the action of immune cells like macrophages, T-Cells and B-Cells that generate bodies and memory cells against the vaccine (Mojsilović, 2017). The respondents were given a list of possible side effects that they suffered after vaccination which were gathered from the pilot study. Some side effects like metallic taste were seen that are not supported by scientific literature related to COVID Vaccine. The results came out as shown in Chart 3.

Chart 3: Different Side Effects reported by respondent upon COVID19 Vaccination

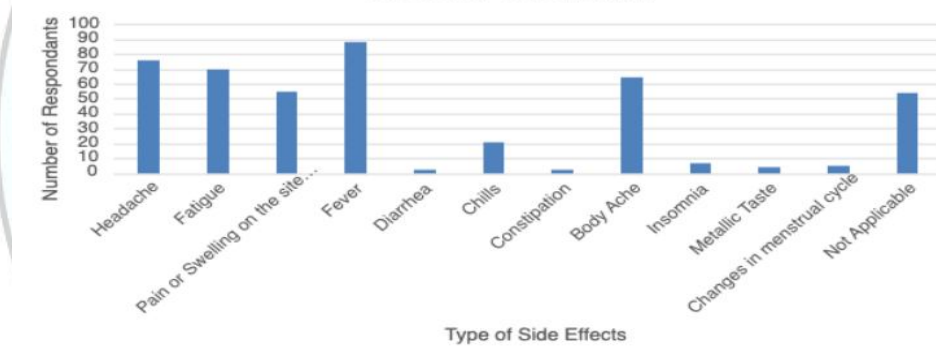


Table 1 enlists a set of side effects that are not commonly reported or seen, but can be lethal if not treated. These indicate, that there is a portion of the population that is susceptible to extreme immune response, and the vaccine development must be modified for this fraction of population.

Table 1: lists out various adverse reactions reported by our subjects which is not widely reported in any previous literature available on the subject

Blood clotting

Consistently high blood pressure.

Eye swelling and redness

Sever vomiting resulting into hospitalization

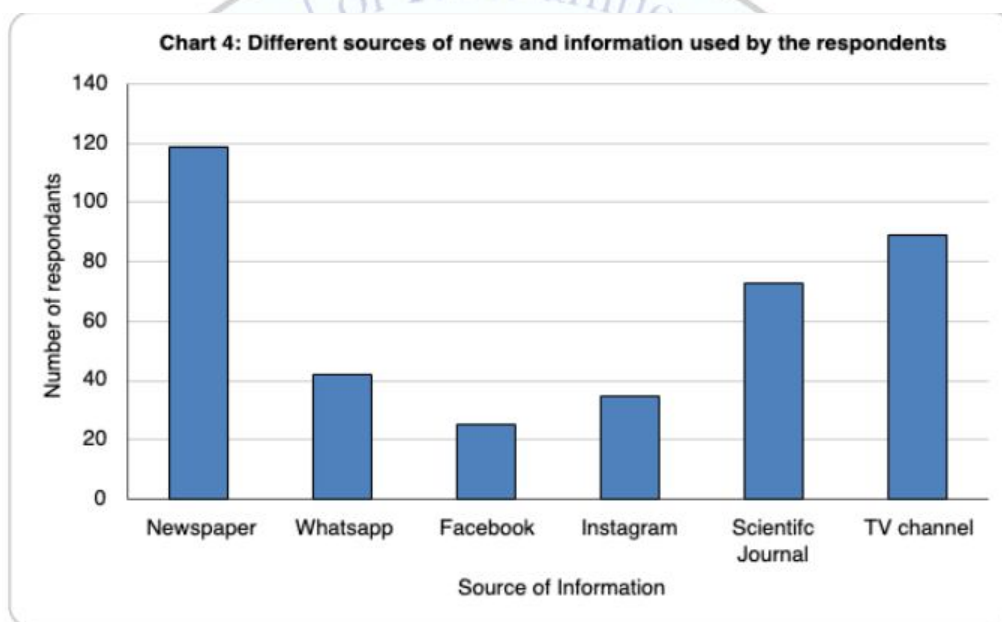
Vertigo

Itching and high fever

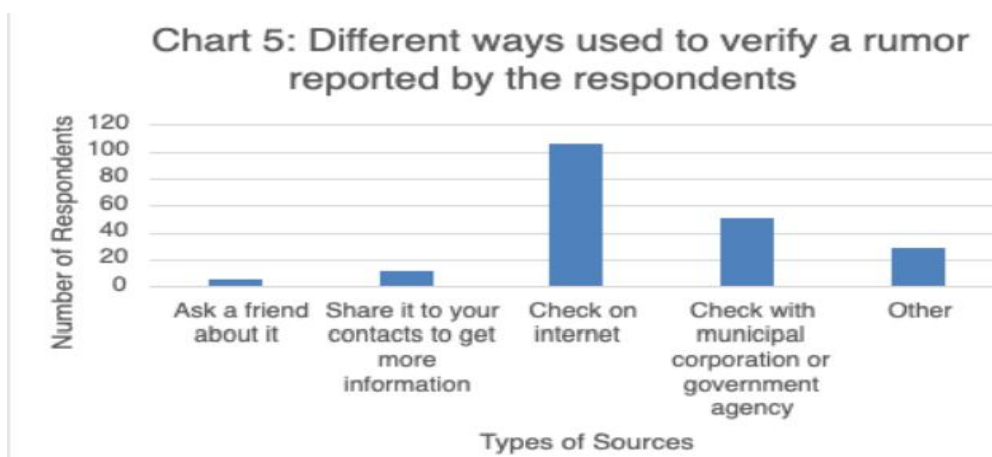
Anaphylaxis

Vaccines must be designed in a way that its severity should decrease in terms of side effects. The fear around the side effects can be tackled with the help of family doctors and trusted individuals who are expert in healthcare (Murphy, 2021). They can explain to people around them and build their trust around the vaccination process. Furthermore, to manage the side effect, a proper layout of nutritional and caloric requirements should be researched & provided. In order to suppress the side effects of vaccines, paracetamol and various painkiller were used. Prolonged usage of these drugs also has chronic effect and can be one of the reasons of certain side effects.

Several factors that play an important role in the public perspective and opinion are social media and journalism. During a pandemic, constant usage of technology has greatly influenced their view. Around 59.5% (119/200) of respondents' consumer information from newspapers, 44.5% (89/200) from TV channels, and 36.5% (73/200) from scientific journals. Based on the result generated by the response of subjects, a comparative graph was constructed represented in Chart 4.



The respondents were given multiple choice to gather information and all the possible source used for content consumption. In this day and age, when the blame for miscommunication is put on social media, equal part of improper journalism can be seen from the collected data. There is a large audience for newspaper and TV channels, giving more authority and power to these sources to make sure they give valid and complete information. Similarly, rumor check on social media and understanding which information is valid and authenticate is equally important. The subjects were asked how do they react to a rumor “How do you verify a rumor?”. While 52.5% (105/200) respondents try to verify the facts on internet, 25% (50/200) check it directly with the government websites or municipal websites and 5% (11/200) share it on social media. Out of 200, 28 respondents choose other methods to verify a rumor that included talking to their family physicians, or looking it up on research papers. Few respondents have been noted, quoting “simply ignoring these messages”.



In the past, during mass vaccination, celebrities like Amitabh Bachan have come up to endorse and help the country fight the diseases and increase vaccine rates like polio vaccines. The actor has been lauded and called the ultimate avenger that has taken the country through a journey of being polio-free (Gautam, 2017). While celebrity endorsement may have worked during the era, around a decade ago COVID pandemic has given this technique a twist. In a study published by the Indian Institute of Brands summarized in the Brand Equity in Economic times in 2021, Doctors emerged as credible and trusted influencers. The study explained that during their study they found a common opinion among the respondents that celebrities would say and do anything for money. Positive reinforcement can be equally effective instead of imposing hard laws and pressurizing people. Clubs and Non-Governmental organizations have encouraged vaccination by organizing talks led by doctors and expert addressing concerns and queries. During the course of present study, it was realized, that there is a desperate need for responsible scientific communication in both English and Vernacular language, that can target and reach all more people.

Conclusion:

To fight with the global pandemic, vaccination has taken a role of powerful tool. While, exceptionally speedy development of vaccine has raised some concerns over its efficacy. The survey conducted during this study gave an understanding on public perspective towards vaccine hesitancy. People are found to be more open to vaccines & are positive towards vaccinations, yet they have shown concern & fear due to side effects, deaths & complications after vaccination. Also, how science is put forth by media equally affects the perception of people. The belief system & religious set of rules are ethical issues which needs to be tackled by ensuring their religious faith. The present study is quiet a preliminary & small data, but if such studies are done with large populations & in in-depth manner, more facts & figures can come out which can help make vaccination process & public health, community services easier to achieve.

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