

Psychological aspects of COVID-19 vaccine in Indian population. Are we still hesitant?

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ABSTRACT

During the Coronavirus disease-19 (COVID-19) pandemic, with channelization of misinformation in several platforms that people can access, the world has witnessed a unique infodemic throughout the globe. Some knowledge helped people to alleviate not only the stigma and anxiety but also inclined them to take appropriate COVID-19 behavior; whereas, the some acted opposite and buildup an aura of negative thoughts in the community regarding the prevention and control and the efforts toward effective vaccine uptake contributing to psychological disbeliefs which in turn leading to vaccine hesitancy. In India, current vaccination program for COVID-19 needs to be communicated to not only promote vaccine acceptance but to also counter rumors related to COVID-19. The WHO has recommended all the individual governments to highlight the vaccine objection spots and that the governments, educate, and implement social awareness on the vaccination with the help of local organizations so that large proportion are covered with this safe immune program. With the emergence of new variants COVID-19 infection can be severe. "Earlier people get vaccinated the earlier people are protected". Taking these concerns, our study will throw some light for primary care physicians on COVID-19 vaccine-related psychological attributes and hesitancy and will present pragmatic approaches to deal with scenarios related to it during the pandemic.

Keywords: Immunity, infodemic, mutation, omicron, pandemic, SARS-CoV-2

Introduction

Several cases of idiopathic pneumonia were reported during the last week of December 2019 in the Wuhan city of Hubei Province, China, that spread to Chinese territory and many other countries after a while.^[1] As observed the cases came to the clinic with history of contact to the seafood market in Huanan and symptoms of fever and cough.^[2] On January 7, 2020 the CDC (Chinese Centre for Disease Control and Prevention) identified novel coronavirus in the swab sample taken from throat of one of the patients, and subsequently, the virus as 2019-nCoV

by the WHO.^[3] In the month of January 2020, the outbreak was affirmed as Public Health Emergency of International Concern (PHEIC) by the WHO.^[4] In the month of February, 2020 the virus was named again as Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by the ICTV,^[5] and the disease was termed as COVID-19.^[6] It reached pandemic status in the month of March 2020, till November 25, 2021, the virus has reached 222 countries and territories around the globe, as reported ≥ 250 million confirmed COVID-19 cases with 5.1 million deaths and more than 234 million people recovered from it.^[7] India, being among the densely populated countries of world, has been fighting the pandemic due to the rampant spread of the disease; till November 25, 2021, number of cases in India is more than 34 million and more than 470,000 COVID-19-related demises.^[7] Social distancing and quarantine measures had been imposed to steady the transmission around the globe to manage healthcare demand and delivery, and protect the people.^[8]

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However, the virus is mutating and so far we have come across different variants, the present mutated variant of SARS-CoV-2 is named as Omicron by WHO on the advice of Technical Advisory Group on Virus Evolution (TAG-VE) was first reported from South Africa on November 24, 2021.^[9] There is no clarity about the transmissibility and severity of omicron as compared to other variants, including Delta.^[9] Vaccines still remain critical to reduce the severity of the disease and mortality, against the dominant mutating variant which is spreading (e.g. Delta, omicron, etc.)

Worldwide discussions were going on the importance of herd immunity to shield the very unsafe individuals including the immunocompromised, the children, and the awfully sick.^[10] The natural way of building up of herd immunity is a slow process, indicating that the pandemic is prolonged. The main goal suggested for policymakers was to acquire herd immunity in an adequate percentage of population^[11] through mass vaccination against COVID-19 rather by widespread natural infection.^[12-14] In a process to achieve herd immunity, the percentage of the population that needs to be vaccinated to fight COVID-19 is unknown. However, herd immunity depends on multiple factors such as the percentage of vaccinated population, ineffectiveness of the virus within the population, and vaccine effectiveness.^[11] The WHO mentioned that vaccine coverage against COVID-19 is the only stable solution to fight against the COVID-19 pandemic.^[15]

When the cases went on rising causing worldwide mortality, economical losses, unemployment, and social distress then few countries started with a good intention to use their resources to make a safe and efficient vaccine to fight the deadly COVID-19 virus. Initial clinical trial of COVID-19 vaccine started firstly in the United States on March 3, 2020,^[16] and many other human trials started off soon after.^[17] In India, few vaccines has been granted approval for use to deal with COVID-19 crisis, includes the mainly accessible Covishield vaccine is adenovirus vectored ChAdOx1 nCoV-19 - AZD1222 under license from Astra Zeneca^[18] manufactured by Serum Institute of India (SII) and Covaxin which is inactivated SARS-CoV-2 vaccine (BBV152) in collaboration with ICMR, made in India by Bharat Biotech.^[19] Sputnik-V by Gamaleya Institute, Russia/ Dr. Reddy's Lab, BNT162b2 (Pfizer/BioNTech), mRNA-1273 by Moderna/NIAID, Ad26.CoV2.S by Johnson and Johnson/Biological E and NVX-CoV2373 by Novavax/SII.^[10]

India launched one of the world's biggest COVID-19 vaccination campaigns officially on January 16, 2021, with an intention to vaccinate its 1.38 billion population with two double-dose approved vaccines in divided phases,^[20] which was rolled out in four phases.

Phase-1 from January 16 to February 28, 2021; comprised all frontline warriors (includes healthcare professionals and workers, security staff, etc.)

Phase-2 started in March 2021; the eligible population was all individuals ≥ 45 years and ≥ 60 years with comorbidities.

Phase-3 started during April 2021; the eligible population was all individuals aged ≥ 45 years.

Phase-4 started in May 1; the eligible population was adults aged ≥ 18 years.

For the vaccination, the registration process is done online through the CoWIN (COVID VACCINE INTELLIGENCE NETWORK) gateway established with the help of United Nations Development Programme,^[21] which is also configured to issue vaccination certificates and SMS reminders for users and track enlisted beneficiaries.^[21] Vaccines for COVID-19 which are approved or presently in process contribute wide array of antibodies and cells along with a substantial immune response, inferring some protection against future strains of virus.^[22] Despite all the efforts, till November 24, 2021, the double dose of the COVID-19 vaccine has been received by merely 34.01% of the population^[23] in contrast to other countries like UK, Canada and USA who vaccinated $>50\%$ of their population with both the doses of COVID-19 vaccine.^[23]

Herd immunity is needed for economic and social activities at the pre-pandemic level so that the costs of the pandemic can possibly be alleviated that can be achieved by successful vaccination campaign. The requirements of a successful vaccination drive are not only a safe and effective vaccine availability but highlighting the factors and areas of vaccine hesitancy that are responsible is also included.

Soon after declaring the epidemic as a public health emergency of global concern WHO affirmed that coronavirus pandemic is furthered by an infodemic of misstatement^[24] described as an overabundance of information – few authentic and few inaccurate – which makes it difficult for the people to search reliable guidance and trustworthy sources.^[25] Rumors spread in hazy and dubious environment which makes the process of vaccine acceptance, difficult.^[26]

The infodemic had impacted on psychological well-being; thus, it is crucial, to start understanding the psychological attributes that describe and differentiate the non-hesitant from the hesitant ones to the COVID-19 vaccine.

Primary Care Physicians (PCPs) act as the first-line healthcare providers whom general population approach for treatment and medical advices, irrespective of the psychological hesitancies prevailing in the community PCPs will not only play a pivotal role in eradicating existing myths and psychological attributes regarding COVID-19 vaccine but also encourage to get vaccinated and spread awareness about the advantage of vaccine in the general population keeping aside the myths related to it during the pandemic.

What is vaccine hesitancy?

Delay in acceptance or refusal of vaccination despite the availability of vaccination services as defined by the World

Health Organization SAGE on immunization.^[27] India is regularly dealing with the vaccine hesitancy issue and the concern about the same is cultivating worldwide, lead to be in the top 10 health threats as declared by the WHO.^[28] In many parts of the world, misinformation and vaccine hesitancy present considerable obstacles to gain herd immunity in a process to straighten the COVID-19 epidemic curve.^[29,30]

What are the psychological disbeliefs? Why hesitancy?

The common hypothesis for vaccine refusal was lack of precision in the vaccine information, the presence of co-morbidity and post-vaccination adverse effect.^[31] Till now, a number of psychological constructs have been analyzed such as, the personality traits neuroticism and conscientiousness^[32,33] altruistic beliefs,^[34] cognitive reflection,^[35] and locus of control^[36] have shown to impact vaccine hesitancy/acceptance which has also been associated with conspiratorial, paranoid and religious doctrines,^[37-40] while mistrust of scientists, health care professionals, and government officials has been associated to pessimistic attitude toward COVID-19 vaccination.^[41-45]

Other psychological constructs such as fear of faulty/fake vaccine, doubtful safety of the vaccine, less number of active COVID-19 cases, the misconceptions like vaccination causes infertility, deaths, and stunting and preference to natural immunity; lower education background, lack of proper communication, the role of the local community leaders, and media in misguiding the public, has impacted vaccine acceptance.^[29]

One of the more commonly shared conspiracy theories related to COVID, is that the vaccines have microchips which will be utilized by the government or by elites (Bill Gates is often mentioned) to track people's behaviors. It was also observed that misinformation was being spread by the people that the current technology transfers microparticles intradermally during vaccination, generating a record of vaccine digitally.^[46]

Many of those who received the first dose of vaccine got infection with the COVID-19 virus and few died as single dose did not mean to produce adequate immunity to fight COVID-19 disease, which lead to the development of false thought that COVID-19 vaccines causing illness and deaths particularly in the rural areas. It also contributed to hesitancy toward the vaccine during the last two phases (i.e. 3rd and 4th) of the vaccination process.

In India, linguistic barrier was observed during COVID-19 vaccination drive, there that the registration procedures to schedule a slot for vaccine was over an app which used English language and as per the 2011 census, preferred language used by $\geq 10\%$ of the population in India is English which is more common among the urban people.

Unmatched pace of advancement of the vaccine along with the premature understanding of virology and immunology of the

COVID-19 infection, has also contributed in undermining the public confidence.^[47]

What efforts are taken?

The Government of India (GOI) has developed and approved crucial infrastructure related to vaccine and arranged active digital information centers in order to observe and discuss the hesitancies and effectiveness of the COVID vaccination drive. The GOI has created NEGVAC to support an efficient approach regarding present COVID vaccination drive throughout the country. NEGVAC responsibility is to provide constant updates on vaccine effectiveness, defining the clinical criteria, monitoring COVID-19 coverage statistics and identifying the high-risk population.^[20,48] The Ministry of Health and Family Welfare (MoHFW) aims to vaccinate the almost all the individuals of India by 2021 by COVID-19 Vaccine Communication Strategy. In order to ease out the massive vaccination drive to vaccinate a huge population, the MoHFW has put in their efforts to ensure that all logistical arrangements are in place by boosting up vaccine storage facilities, developing mobile app and the CoWIN web portal and for conducting trainings of vaccinators, undertaking dry runs of vaccination activities in states.

Establishment of NMRRCC, as a COVID-19 vaccine communication plan, whose main role is to report district collectors throughout the India about vaccination misinformation.^[49] such as advantages of taking vaccine, side effects, and composition that has been channelized via various ways, which can have a strong influence on vaccine acceptance.^[50]

How to overcome this?

For COVID-19 vaccine hesitancy, to tackle it the five Cs include, complacency, confidence, communication, context, and convenience (sociodemographic characteristics).^[51,52] In a process to eradicate or achieve optimal disease control by many public health efforts one of the major barriers is vaccine hesitancy.^[53] These factors of vaccine hesitancy differ depending on disease, the vaccine, proportion of population being studied, and others.

To manage the infodemic appropriately: The subject experts highlighted that,

- Government should take measures to engage online platforms and media centers to channelize accurate and correct information in order to lighten concerns related to vaccine (availability, efficacy, safety, etc.), contextual issues (conspiracy theories, non-transparency and historical influences, etc.) and community-based/individual issues (knowledge, mistrust, beliefs, health-related attitude, etc.).^[54]
- As well, conveying accurate information through celebrities and local community leaders can motivate and prove to be beneficial in improving people's enthusiasm to get vaccinated.^[52]
- The role of doctors, health workers, journalists, and politicians is that they should act in sync to create and spread

positive information and belief to the people related to the vaccine.^[55,56]

- Key to improve vaccine acceptance is the early and frequent involvement of religious leaders,^[57,58] and collaboratively working of health authorities with various stakeholders of society in a process to avert the gloomy thought that they are only acting on behalf of government advisors.^[59]

Educational material directed toward health education:

- COVID-19 vaccine was carefully tested for safety despite the fact that it was created quickly.
- Side effects of COVID vaccine are temporary and do not mean you are sick.
- Getting the COVID-19 vaccine can protect you from severe COVID-19 infection and mortality.
- Safety and effectiveness could easily be assessed only because of the diversity in COVID-19 vaccine testing.
- As per the CDC guidelines people with allergies to certain foods, insects, latex, and other common allergens, and also all pregnant or lactating individuals with those trying to conceive, can get a COVID-19 vaccine

Conclusion

Vaccine hesitancy has been pointed as a serious public health problem, putting the health of people at risk. So, it is critical to learn about the psychological factors involved in vaccine hesitancy. With the advancement of technology and social media, it is getting difficult to avert all the misinformation received by an individual which can be detrimental in the efforts toward vaccine reception; role of government-induced vaccine policy measures to curb the hazards of infodemic, addressing various issues regarding vaccine safety and improve people's willingness to get vaccinated by channeling correct messages is the utmost need. PCPs as a healthcare provider are responsible for educating the general population to cast away the myths and encourage them to get vaccinated to not only reduce the morbidity and mortality occurring due to the viral infection but also for early eradication of the pandemic.

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Conflicts of interest

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