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Post-Vaccination COVID-19 among Healthcare Workers

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ABSTRACT

COVID-19 was acknowledged as a pandemic on 11th March 2020, which was just an initial stimulus for the cascade of events which were about to occur around the globe because of challenges faced due to COVID-19. During these challenging times billions of people were home due to COVID lockdown and there were a few amongst these who were made to work during these times as well. Health care workers were one of the most exploited groups of people during this pandemic, as they were to work while putting their own health as well as the health of their loved ones at risk. After everything the health care workers had to face as a part of their profession, even the behaviour of some patients as well as the government/ management of hospitals were so inhumane that it created an even more unhelpful environment for them. The news of the vaccine against COVID gave hope to many, while there were some concerns related to it for a part of society, most people accepted vaccination without much resistance. Post vaccination infections with COVID were found to be mild in nature and vaccination even succeeded in reducing the ICU admission as well as the chances of death after infection drastically. Much research was conducted around the globe to understand the effects of vaccination on COVID infection and the results in all were almost similar when it came to reducing death rate and severity of infections. Even today there is on-going research to assess the long term effects of vaccines on the health of individuals. The aim of this review is to provide an overview of COVID-19 pandemic, vaccination drive in India as well as post vaccination infection of COVID among health care workers.

Key words: COVID-19, Medicines, COVISHIELD, COVAXIN

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INTRODUCTION

WHO declared novel Coronavirus Disease (COVID-19) as a pandemic on 11th march 2020, which marked the beginning of one of the most challenging health crises globally [1]. The health care system of every country started preparing themself to tackle this outbreak, with the limited data available, the health care system with the help of the community started their fight against the disease. With the declaration of nationwide lockdown in India on 24th march 2020 when the number of cases in the country were near about 500 to control the spread of the disease, many new challenges emerged, mental health challenges, economic challenges, etc. [2-5]. During the peak of COVID-19 in India, Indian health care system faced many problems including an increase in no of cases of violence against health care workers, change in behaviour towards health care workers due to fear of infection, inhuman working hours, management failure, facing high no of deaths, increased workload, etc., due to such reasons the system was so overburdened that it was near collapse [6].

One of the most horrifying situations of COVID-19 pandemic in India came after the government started the lockdown. This led to millions of migrant workers marching out of cities on foot and returning to their homes [7]. The residents of the city also started hoarding of essential items; panic buying and financial insecurities became a concern for many. India had another major problem that was containing COVID-19 spread among economically disadvantaged people, who may not isolate themselves, and don't have much financial reserve.

The pandemic and the following lockdown have also led to increase in no of mental ailments as the pandemic caused many to lose their jobs and also caused many other types of burdens such as reduced social interaction, sudden change in lifestyle, facing death of their close ones as well as it gave a feeling of helplessness as there was a shortage of medical facilities for some time when COVID was at peak [8,9]. Many health care workers stayed isolated from their families as they were one of the most susceptible to acquire the infection, many health professionals were repeatedly infected by COVID which also made them weak both physically and mentally these uncertain circumstances have also led some to mental instability. Obsessive compulsive disorder patients, especially those

who have checking, hoarding and washing compulsion, were at higher risk. The pandemic brought along with it social exclusion, xenophobia, sleep disorders, grief, depression, loneliness, paranoia, the fear of losing livelihood, limited resources, sense of insecurity, the guilt of transmitting the disease further and so forth. A survey by the Indian psychiatric society showed a 20% increase in mental illnesses since the COVID-19 outbreak in India [10].

The increased negative social trend of stigma acted as a barrier to social inclusion and treatment delivery. This resulted in people not wanting to come to medical infrastructure at early stages of disease and also hiding the disease from others which led to spread of disease. Worse still is that in some areas, the frontline health workers were unfortunately being victimised and marginalised for serving in designated COVID-19 hospitals. In the constant spread of misinformation among the public, people admitted in the isolation wards were escaping. Of these causal factors, fear of COVID-19 infection was the most prominent suicide causality, although most of the victims were later diagnosed with COVID-19 negative in the autopsy.

The lack of access to addictive substances like alcohol and drugs has led to extreme psychological distress, compelling people with an addiction to carry out self-harm activities in India. At the end of March, seven people committed suicide out of depression in the state of Kerala after being unable to buy alcohol during the on-going nationwide lockdown, whereas the virus has resulted in one casualty during that period of time [11]. India's doubling rate increased significantly due to the swift decision of lockdown, taken by government. Due to the lockdown the spread of disease was slowed as international and national travel was suspended as well as there were many restrictions for inter and intra state travel. This reduced rate of doubling was helpful in management of COVID-19 and helped reduce the burden on healthcare. COVID showed that the healthcare infrastructure needs to be well equipped and monitoring of diseases needs to be taken seriously.

As of January 13th 2022, where almost 75%, that is three fourth of the population of the United States of America, have already been injected with at least one dose and more than 60% have received both doses, whereas the picture in low income countries is quite different [12]. Less than 10% of the population in such countries have received at least one dose [13]. From the figures above it is clear that vaccine inequality is a thing to ponder upon.

Objective

To provide the readers with

- An overview of COVID pandemic
- An insight into what the problems faced by healthcare professionals are.
- COVID vaccine
- Overview about Post vaccination covid in health care workers.

LITERATURE REVIEW

PubMed and Google scholar were used to search the following keywords: “COVID-19”, “COVID in doctors”, “COVID in healthcare workers”, “COVID vaccination in India”, “vaccine hesitancy for COVID”, “vaccination against COVID”, “post vaccination COVID in health care workers”, “COVID and health care system” and the results of the same were used as a reference to write this review.

Overview of COVID pandemic

As of 13th May 2022 COVID pandemic have claimed more than 62 lakh lives and pushed millions more towards other difficulties [14]. Everything was at stand still for approximately one year. This loss of life, livelihood and social engagement caused a bigger problem than the disease itself, everyone had their hopes pinned to vaccine but with the development of vaccine against COVID the problem of vaccine hesitancy also came to light. Even the members of the medical fraternity displayed hesitancy upto a certain extent initially [15]. As of 5th may more than a billion doses of vaccine have been administered in India [13].

Problems faced by healthcare providers during COVID-19

During the initial days of COVID-19 pandemic due to the fact that there were no fixed treatment regime for treatments of COVID patients and the fact that the nations were not prepared for such scenarios there were situation like shortage of PPE, medicines, as well as low rates of testing [16-19]. The health care professionals were not acquainted with using PPE for long hours and it is also difficult to do certain procedures while using PPE, these challenges faced by the health care professionals were just the stimulus for the ever changing field of medicine to change and adapt to circumstances at even faster rates [20]. This process of adaptation brought both mental as well as physical stress on them.

The working hours increased with increase in number of cases as the available staff was not adequate, causing more burden on staff, during the peak of COVID the health care workers had to face many problems including but not limited to death of loved ones, facing multiple deaths daily, lack of protective equipment, cases of violence against health workers are a few problems to name. There were a few incidents where the wages were also delayed [21].

DISCUSSION

Vaccination drive in India

When it comes to COVID vaccine there are two main contenders in Indian markets, namely, COVISHIELD and COVAXIN.

COVAXIN: It is India's first domestic vaccine for COVID infection; it is an inactivated virus vaccine [22].

COVISHIELD: Serum institute of India, under agreement made with oxford and other manufacturers is producing COVISHIELD vaccine in India [22].

As of 5th may 2020, more than a billion doses of COVID vaccine have been administered in India itself. This seems a long way from the first incidence of COVID in China and declaration of COVID-19 as a pandemic, but there is still a long way to go before this pandemic ends [23,13].

Vaccine development was a challenge but what came after was a challenge of equal magnitude. Distribution of vaccines and the requirement of a functional cold chain, manpower to maintain the cold chain, as well as the implementation of the vaccine program were the challenges ahead.

During the initial phase the vaccination was completely under the control of the government, with proper coordination between different departments and manufacturers responsible for vaccination.

Due to India's capability to produce affordable medical, surgical and generic medicine for the world due to this fact India played an important role in supplying medicine as well as vaccines worldwide. It is also due to the fact that India is a leading manufacturer of vaccines, that the vaccines are so affordable.

Vaccination drive in India started on 16th January 2021, the free of cost vaccination by government was divided in phases each phase focused on a specific population and these phases were divided according to the need for vaccination according to risk and exposure [24]. Priority was given to:

- Health care workers
- Front line workers
- Citizens more than 45 years of age
- Citizens whose second dose has become due
- Citizens 18 years and above

National COVID vaccination began with all health care workers, afterwards the program expanded over time to include frontline workers, thereafter citizens over 60 followed by citizens over 45 years of age and finally over 18 years old. As part of the National COVID vaccination Program from 16th January to 30th April. In 2021, 100% of the vaccine dose was procured by the Government of India and provided to the state government for free of charge. State government was to provide these free doses of vaccine to the defined priority groups. To increase the pace of vaccination, participation of private hospitals were also enlisted where Individuals can also choose to be vaccinated at a given rate [24].

Vaccine hesitancy

The main reasons for vaccine hesitancy were safety concern; other important reasons were efficacy and mild nature of disease [25]. As per the observations made in a study published on 12th august 2020, the reasons for vaccine hesitancy among doctors and general population were almost similar, in the same study it was found that males have higher acceptance for vaccines than females. Also people at higher risk also were found to have greater acceptance for vaccines [15].

To reduce vaccine hesitancy and promote use of vaccine as well as to create awareness about COVID-19, Indian government used various methods such as changing ringtone of every network provider to COVID awareness related message, many celebrities came out and promoted vaccines, social networking sites like you tube, instagram, etc. were told to keep check on false information as well as promote awareness about COVID-19 and its vaccine.

Post vaccination COVID in health care workers

The efficacy of vaccines was a major concern among both doctors and the general population [15]. Many studies of different types were conducted after the start of vaccination to assess the effect of vaccines in the real world. And in almost all of them the results were similar, that is vaccination reduced the incidence of severe cases of COVID-19 drastically [26-28]. After vaccination incidents of COVID-19 reduced and not only the incidents reduced but also the people who were infected mostly reported no symptoms or less severe infection. Vaccines reduced the death rate as well as the time required to recover from the infection.

According to a research conducted on workers of Maulana Azad medical College, New Delhi, 325 people were enrolled and amongst them 57 people were infected by COVID-19 virus, after the start of study. Around 90% of participants were fully vaccinated, in this study it was found that nearly 17.5% of people were found to be infected after vaccination. In this study results were confirmed using RT-PCR or clinically or Ag test. Among the 57 positive cases, 20 were fully vaccinated and the remaining 37 were vaccinated with one dose of COVID vaccine [26]. The study concluded that 1 in 9 health care workers were infected after completion of vaccination *i.e.* after 2 doses of vaccine.

In another study which was conducted on 3235 health care workers of a single multi-speciality hospital, it was found that out of 3235 participants 85 were infected by COVID-19 virus. Among these 85 people infected 65 People were fully vaccinated and the remaining 20 were partially vaccinated. The protection rate of COVID-19 vaccine was found to be near 97%. Among the health care workers under study only 2 required hospitalizations and none required ICU admission and there were no deaths [27]. COVID-19 infection occurred in around 2.3% of participants of both fully vaccinated as well as partially vaccinated groups.

In a different study conducted on health care workers working in various hospitals under Apollo group hospitals, a total of 28342 workers from 43 hospitals in 24 cities were included in the study. In the study it was found that around 5% participants had post vaccination infection [28].

CONCLUSION

Almost all studies had different results if the percentage of people getting infected is seen, which might be due to the fact that all these studies are from different environments, so the exposure and also the habits of participants would be different as well as the positivity rate of that particular region might be different from others. But one thing remained the same which was that the vaccinated people had less severe infection and the need for ICU admission were very less and death after infection were also greatly reduced.

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