

EFFICACY OF COVID 19 VACCINATION AMONGST THE DENTISTS IN KHEDA / ANAND DISTRICT DURING THE SECOND WAVE OF THE PANDEMIC

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Abstract:

Aims:To evaluate the efficacy of COVID 19 vaccination amongst the dentists in Kheda / Anand district during the second wave of the pandemic.

Methods and Material:All the data were collected through an online google survey questionnaire forms and circulated amongst 100 dentists practicing in Kheda / Anand district. Descriptive statistics was used for statistical analysis.

Statistical analysis used:Data were analysed using IBM SPSS for Windows, v. 20 (IBM Corp., Armonk, USA). Descriptive statistical analysis was used to describe factors included in the survey. Tests of proportion were used to describe the continuous variables and the categorical data were described using percentages.

Results:A total of 100 dentists responded of which 50% were males and 50% were females. 99% of the dentists were vaccinated of which 94% vaccinated with covishield and 5% were vaccinated with covaxin and 91% of the dentists were vaccinated with double dose and 8% with single dose of the vaccine. 23% of the dentists tested positive for COVID 19 after first dose of

the vaccine while 73% tested positive after the second dose of the vaccine who were practicing general dentistry during the second wave of the pandemic. All the affected dentists were recovered through home isolation.

Conclusions: These results conclude that the effectiveness of the COVID 19 vaccine has an impact on decreasing the severity of symptoms among the dentists.

Key-words: COVID 19, Covishield, Covaxin, Dentist, Pandemic

Introduction:

Dental professionals are at the top of all professions to contract Covid-19 because of they are at physical proximity to their patients.¹ A high number of deaths due to Covid-19 among the dental community during the second wave created anxiety among the dentists that the vaccines may not be protective against the new mutant strains of SARS-CoV-2 which is thought to be highly contagious U.K. variant (B.1.1.7) and the Indian variant (B.1.617) causing the rapid increase in cases during the second wave.² The second wave of COVID-19, began around February 2021, had hit India very severely with the daily cases reaching nearly triple the first peak. The epidemic evolution in India is quite complex due to regional inhomogeneities and the spread of several coronavirus mutants.³ In early January 2021, the Drug Controller General of India (DCGI) approved two vaccines for clinical use, the Oxford–AstraZeneca vaccine, which is manufactured by the Serum Institute of India (SII) under the trade name "Covishield" and Bharat Biotech's "Covaxin".⁴

This questionnaire is based on the dentists in Kheda/Anand district. An online survey was carried out to record the Covid-related experiences of dentists after vaccination. The primary aim of the study was to assess whether vaccination has helped to reduce the positivity rate amongst dentists during the second wave.

The secondary objectives were to assess:

1. The symptoms post vaccination
2. Whether the vaccine leads to less severe covid symptoms in vaccinated people
3. Whether the dentists were practising during the second wave of the pandemic

Subjects and Methods:

- Ethical clearance and informed consent

Ethical clearance and informed consent from the Institutional Ethics Committee was obtained before the start of the study. All participants willingly participated in the study. The study was conducted in July 2021. Participation in the study was voluntary and identification information was kept private for the study subjects.

- Study population and study sample

The present study was a descriptive cross-sectional (questionnaire) study. The study population consisted of BDS & MDS dentists who are engaged in private and government practice during the second wave of the pandemic in Kheda / Anand district of Gujarat. The sample size required for the study was calculated using the following formula for sample size calculation:

$$n = Z^2_{1 - (\alpha/2)} \times S^2 / d^2$$

Where:

Z - Is the standard normal score with 95% confidence interval (CI) ($\alpha = 0.05$);

S - Is the standard deviation of the variable;

d - Is maximum acceptable error.

To take account of potential errors and sample loss, which is common in cross-sectional studies, a final sample size was estimated to be 150. In order to pick the study subjects, a simple random sampling methodology was used. However, only 100 subjects returned the questionnaire that constituted the final study sample.

- Research instrument

A self-designed questionnaire written in the English language was made for the survey. An online questionnaire using Google Forms was used to collect the data. The questionnaire comprised of a series of questions collecting the data to know if the dentists were vaccinated, which vaccine did they take, symptoms post vaccination, if they were tested positive after vaccination and if they were practising during the second wave of the COVID 19 pandemic. The questionnaire was made available using online mode as Google documents and the link was circulated amongst the practitioner using e- mail and WhatsApp and was not handed over personally.

QUESTIONNAIRE

1. Name:
2. Age:
3. Gender:
4. Are you vaccinated against the COVID 19?
 - Yes
 - No
5. Which vaccine did you take?
 - Covishield
 - Covaxin
 - Other (mention)
6. How many dose(s) have you taken?
 - Single dose
 - Double dose
7. What was the time interval between both the doses?
8. Which symptoms did you experience after the first dose of the vaccine?
 - Tiredness
 - Myalgia
 - Fever
 - Headache
 - local pain at injection site
 - Joint pain

- Nausea
 - Diarrhea
 - None
9. Which symptoms did you experience after the second dose of vaccine?
- Tiredness
 - Myalgia
 - Fever
 - Headache
 - local pain at injection site
 - Joint pain
 - Nausea
 - Diarrhea
 - None
10. Did you take any medications for the symptoms?
- Yes
 - No
11. Which medications did you take?
12. Are you tested positive for COVID 19 after taking the vaccine?
- Yes
 - No
13. After which dose did you test positive for COVID 19?
- First dose
 - Second dose
14. What was the time interval between your vaccination and the day you tested positive for COVID 19?
15. Which symptoms did you experience?
- Dry Cough
 - Fever
 - Tiredness
 - Sore throat
 - Diarrhea
 - Conjunctivitis
 - Headache
 - Loss of taste or smell
 - Skin rashes
 - Shortness of breath

- Chest pain
 - Loss of speech
 - None
16. How did you recover?
- Home isolation
 - Hospitalized
17. What was your recovery time after getting infected by COVID 19?
18. Were you practicing during the second wave of COVID 19?
- Yes
 - No

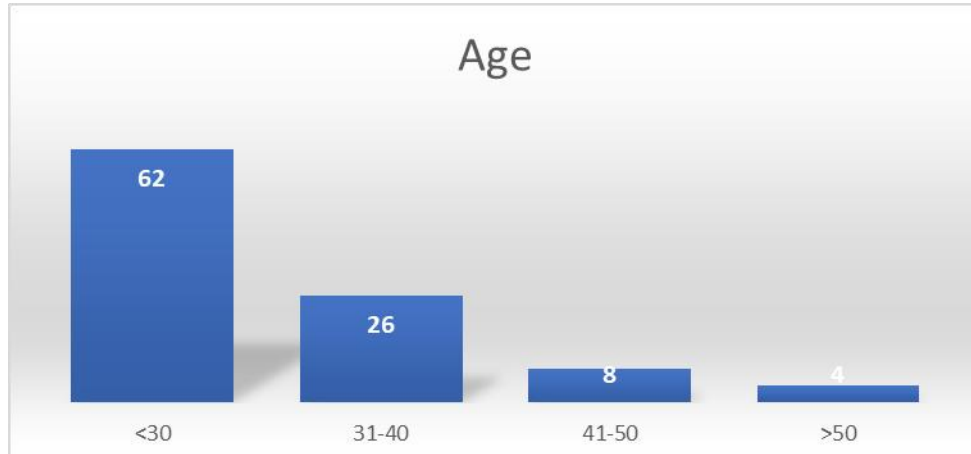
What kind of practice were you doing?

- Statistical analysis

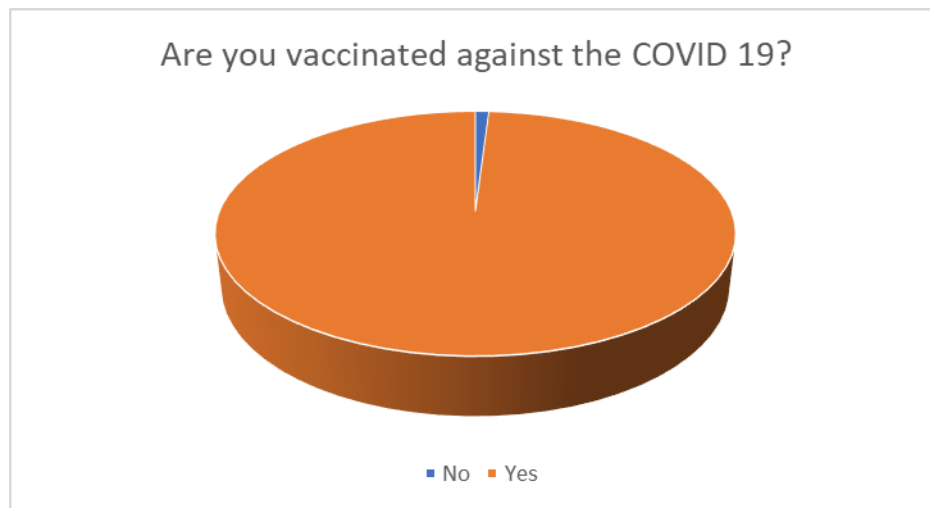
Data were analysed using IBM SPSS for Windows, v. 20 (IBM Corp., Armonk, USA). Descriptive statistical analysis was used to describe factors included in the survey. Tests of proportion were used to describe the continuous variables and the categorical data were described using percentages.

Results:

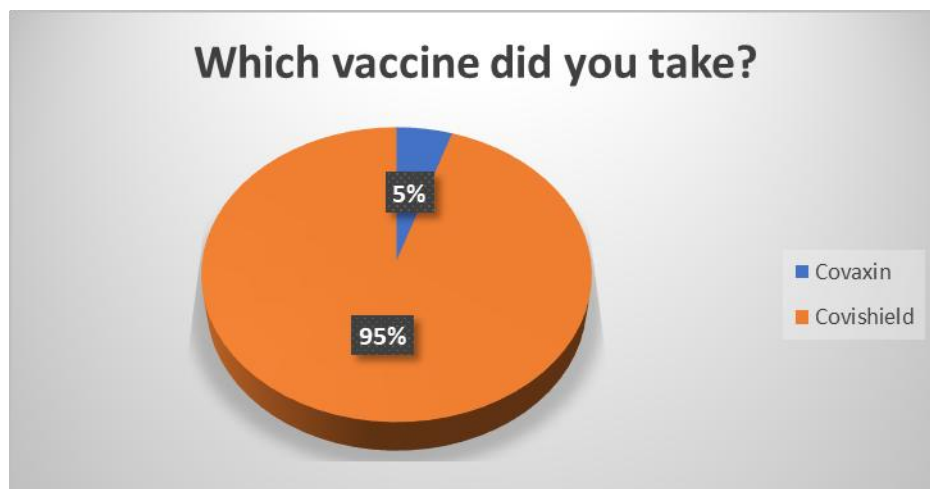
One hundred participants completed the survey questionnaires. Out of 100 participants, 50% were males and 50% were females. The age of the participants ranged from 31 years to 66 years. (Graph 1) 99% of the participants were vaccinated while 1% were not vaccinated. (Graph 2) 94% were vaccinated with covishield and 5% were vaccinated with covaxin. (Graph 3) 91% were vaccinated with double doses, while 8% were vaccinated with single dose. (Graph 4) Various symptoms experienced by the practitioners after the first dose of the vaccine. (Graph 5) Various symptoms experienced by the practitioners after the second dose of the vaccine are listed. (Graph 6) 45 % of the practitioners did take analgesics after the symptoms occurring after taking the vaccine. (Graph 7 & 8) The time interval between the first dose and the second dose of the vaccine ranged from 22 to 120 days. 12% of the practitioners tested positive for COVID 19 after taking the vaccine. (Graph 9) 27% after the first dose and 73% after the second dose. (Graph 10) The time interval from the day of vaccination and the day the practitioners tested positive ranged from 7 to 84 days. (Graph 11) Various symptoms the practitioners experienced are listed. (Graph 12) All the affected practitioners recovered through home isolation and the recovery time ranged from 7 to 21 days. All the practitioners were practicing general dentistry during the second wave of the pandemic.



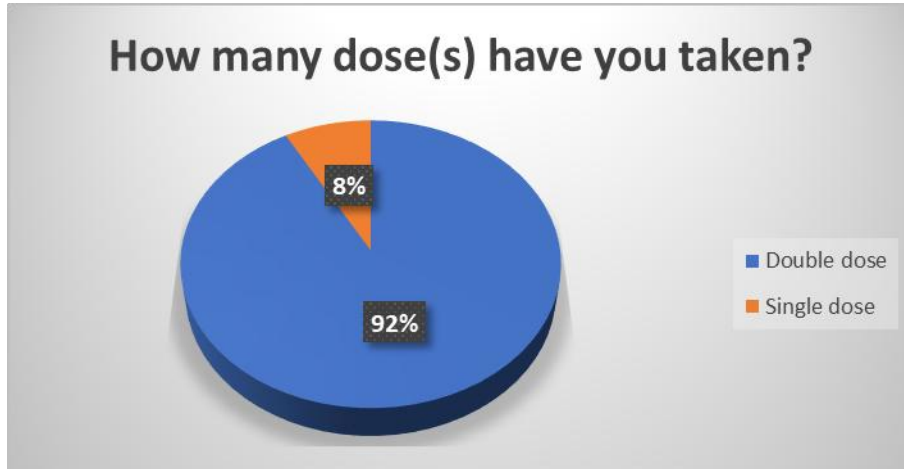
Graph 1: Age groups of the participants



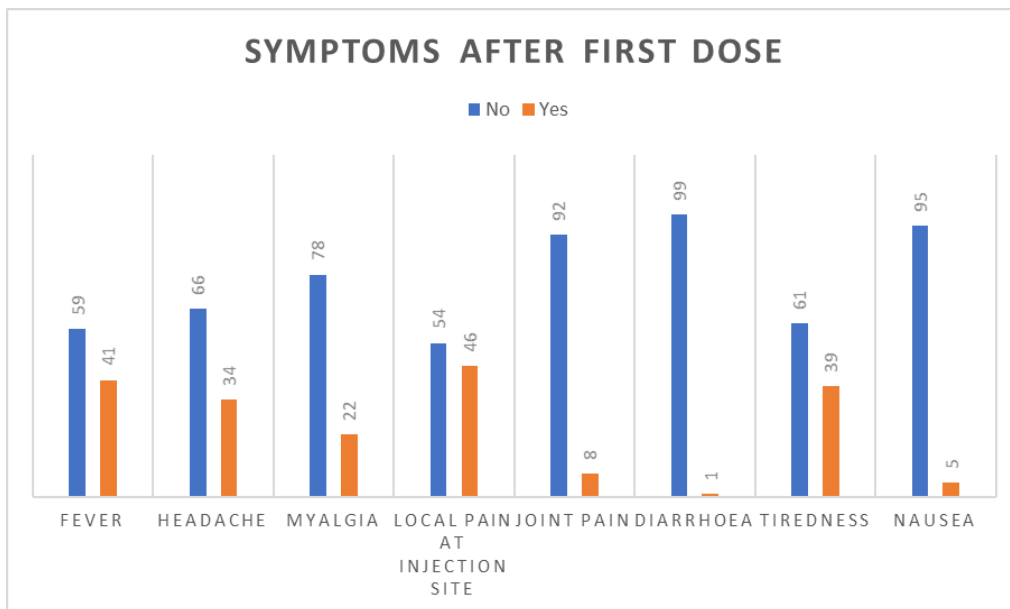
Graph 2: Vaccination against COVID 19



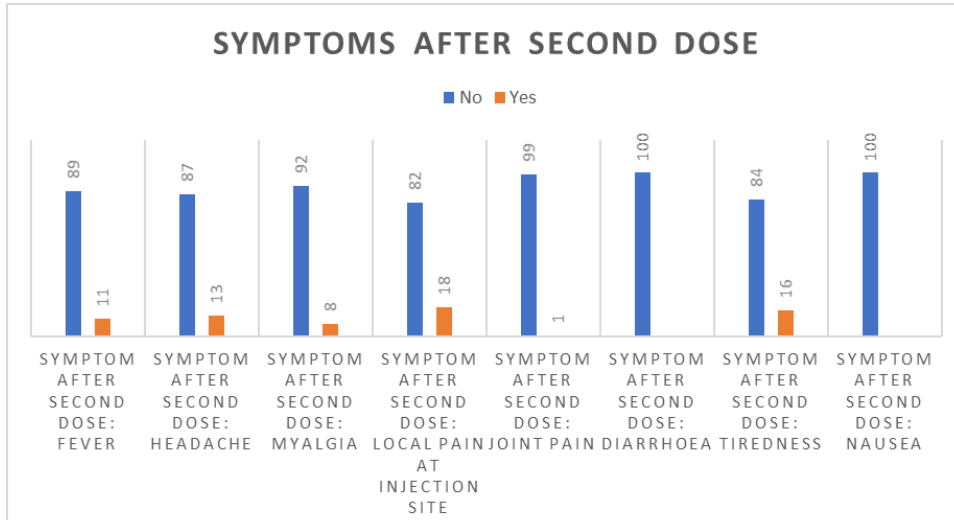
Graph 3: Vaccinated with which vaccine: Covishield/ Covaxin



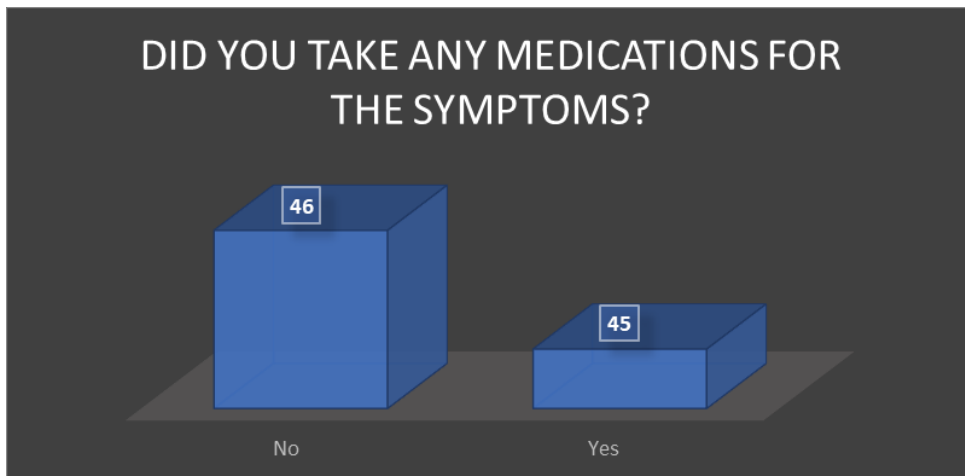
Graph 4: Doses of the vaccine taken



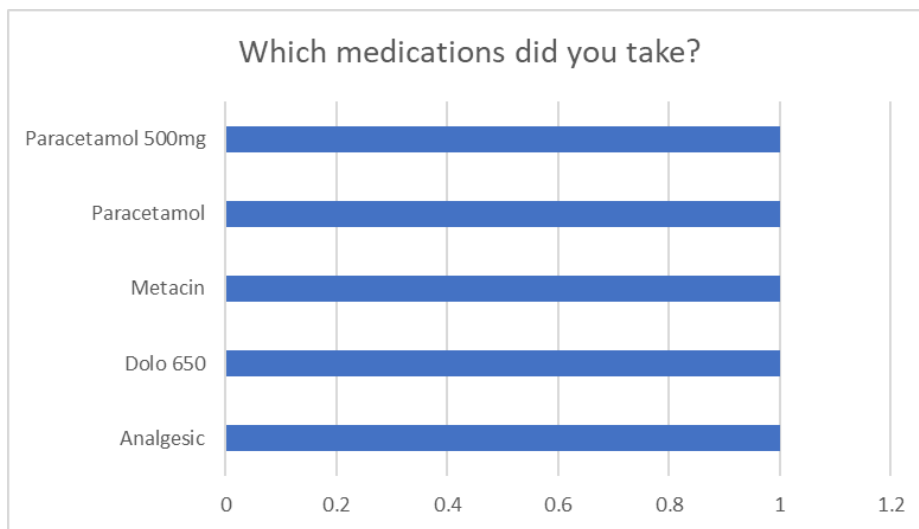
Graph 5: Symptoms after the first dose of the vaccine



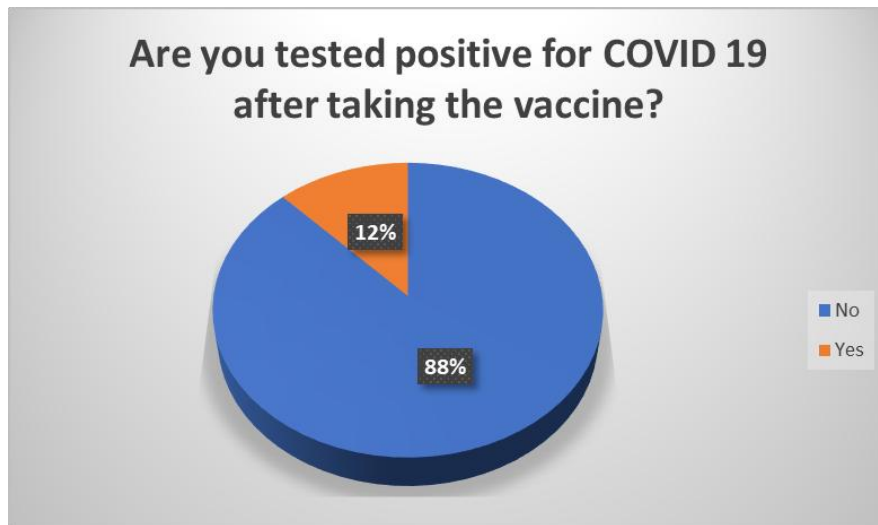
Graph 6: Symptoms after the second dose of the vaccine



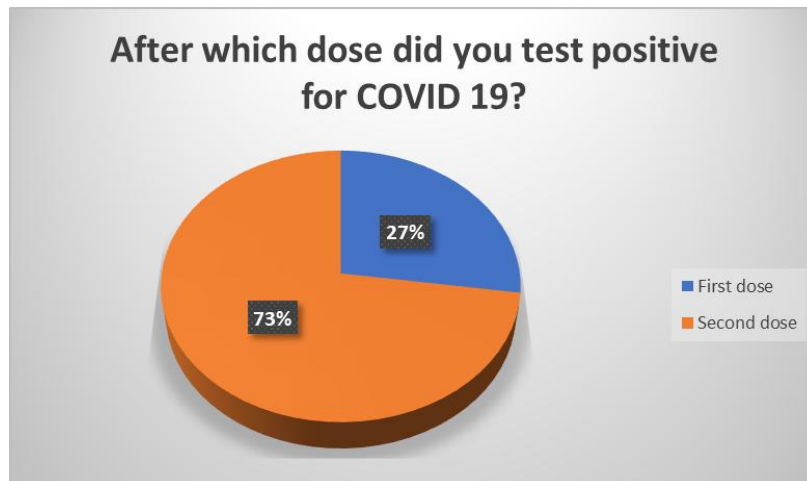
Graph 7: Were medicines taken for the symptoms



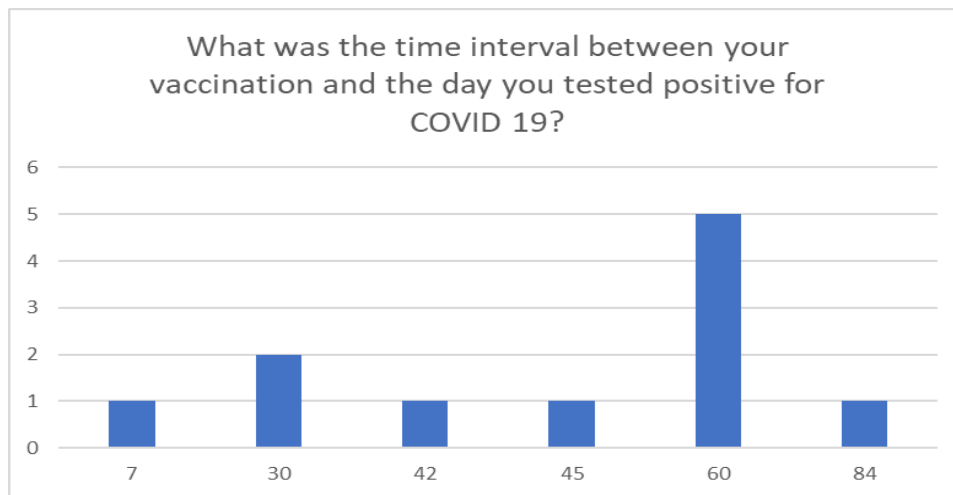
Graph 8: What medicines were taken for the symptoms



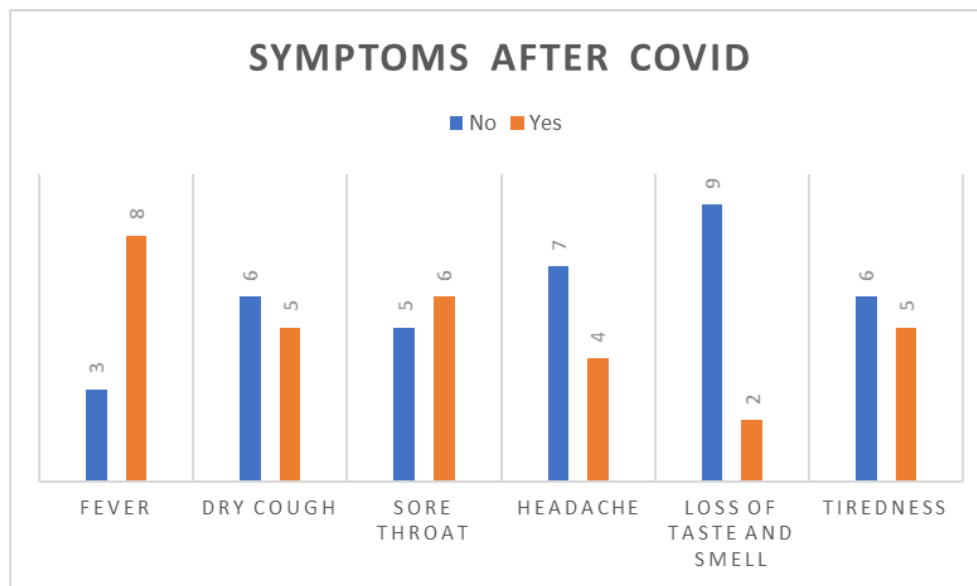
Graph 9: Tested positive after the vaccination



Graph 10: After which dose tested positive after the vaccination



Graph 11: Time interval between the vaccination and the day tested positive for COVID 19



Graph 12: Symptoms after COVID 19

Discussion:

With a population of 1.38 billion, in the initial phase of the COVID-19 vaccination programme, India aimed at vaccinating 300 million people by August 2021, including 30 million health workers and frontline workers (eg, police, soldiers), and 270 million elderly people (ie, aged over 50 years) and people with co-morbidities.⁵

Two vaccines were launched in India for clinical use: Covishield which is developed by the Oxford AstraZeneca and manufactured by the Serum Institute of India (SII). It is prepared by using the viral vector platform which utilizes a modified chimpanzee adenovirus – ChAdOx1 to carry the COVID-19 spike protein into the cells of humans and create an immune response. The Covaxin which is developed by Hyderabad-based Bharat Biotech International Ltd in association with the Indian Council of Medical Research (ICMR) and the National Institute of Virology (NIV) is developed by utilizing Whole-Virion Inactivated Vero Cell-derived technology.⁶

Against this background, the present study was conducted to determine the effects of vaccination on positivity rate and severity of symptoms among the dentists during the second wave of Covid-19. Dentists were selected in the study, as they are considered high-risk sub-group healthcare workers, and are more likely to be exposed to SARS-CoV-2 virus than the general population. It is assumed that positive effects of the vaccine in this sub-group, if any, would be applicable to the whole population.

It has been reported that the COVID-19 vaccines help reduce severity of infection and need for hospitalization.⁷ This finding was seen in our study as all the affected dentists showed less severe symptoms of COVID 19 after both doses of vaccination and were cured through home isolation and hospitalization was not required.

On-going research has shown that both Covaxin and Covishield are likely to be protective to limit the severity and mortality of the disease in the vaccinated individuals.^{8 9 10} Our data demonstrated that currently there is little to choose between Covaxin and Covishield, both having similar capability to prevent Covid-19.

Conclusion:

The online survey inferred that vaccination has a definitive role to play in reducing the covid positivity rate amongst dentists causing less severe symptoms during the second wave of the pandemic. The two vaccines available currently in India, Covishield and Covaxin, are equally effective and there is no relation between the type of vaccine administered and the positivity rate among vaccinated persons.

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