

**Incidence and severity of SARS CoV2 Infection  
after COVID-19 vaccination  
among adult population : A Cohort study**

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# Introduction

- An illness of current concern causing threat to the global population is the COVID-19 infection which is caused by the SARS-CoV2. Now the concerned challenge faced in responding to this pandemic is that, no specific vaccine exists which could prevent the infection.
- A vaccine creates an immune system response by forming antibodies to recognize and fight the agent that causes the infection(1).

- The vaccination for COVID-19 pandemic is been limited throughout India. In order to fend off the spread of coronavirus disease 2019 and to protect the persons who are at high risk for morbidity and mortality the community should be vaccinated effectively.
- The Vaccination began in January 2021 and however the cases started increasing from Mid-March. Hence to see the effect of vaccination on incidence of COVID-19 cases the study is conducted and in addition, to assess the severity, their frequency after receiving the first and/or second dose of COVID-19 vaccine.

# **AIM**

1. To study the incidence and severity of SARS CoV2 Infection after COVID vaccination.

# **OBJECTIVES**

1. To find the Incidence of SARS CoV2 Infection among Vaccinated and Unvaccinated.
2. To compare the development of SARS CoV2 Infection in vaccinated and unvaccinated.
3. To assess the severity of COVID 19 among both the groups..

# **METHODOLOGY**

**Type of Study:** Observational, Analytical Study

**Study design:** Cohort Study

**Place of Study:** Dr.D.Y.Patil Medical College and Hospital, Pimpri, Pune

**Study Population:** Adult Population of Pimpri Chinchwad Municipal Corporation

- **Period of Study:** April 2021 - April 2022
- **Sample Size:** With 0.06% incidence of SARS CoV2 among vaccinated and 0.19% among unvaccinated (2). With 1% significance level, power of 95% and ratio of 1:3, the minimum sample size required is calculated to be 164 in the vaccinated group and 492 in the unvaccinated group. The software used is WinPepi.
- **Sampling Technique:** Convenience sampling

# Inclusion Criteria

- **Group 1** –vaccinated Individuals over 18 years of age - with atleast 1 dose of Covishield.
- **Group 2** – unvaccinated Individuals over 18 years of age.

# **Exclusion Criteria:**

1. Other than Covishield vaccinated individuals.
2. Patients with TB, RA, Chronic Illness, Malignancy, Malnutrition, Pregnancy, Any autoimmune disease and Immunocompromised Individuals.
3. Patients on Chemotherapy, Steroids, long term medication.



# DATA COLLECTION

- Institutional Ethical Clearance was obtained before the start of study.
- Verbal/Electronic informed consent was obtained from all the participants
- Contact details of vaccinated individuals was obtained from OPD vaccination register, Dr DY Patil Medical College, Pune.
- Participants were interviewed telephonically by Residents of Department of Community Medicine, Dr DY Patil Medical College, Pune.

**GROUP-1**  
vaccinated group

Information of Vaccinated individuals was gathered from vaccination register

First follow-up was done via telecall on 90<sup>th</sup> day(12<sup>th</sup>week)



Second follow-up is being done via telecall on 120<sup>th</sup>day (16weeks) from 1<sup>st</sup> dose of vaccination



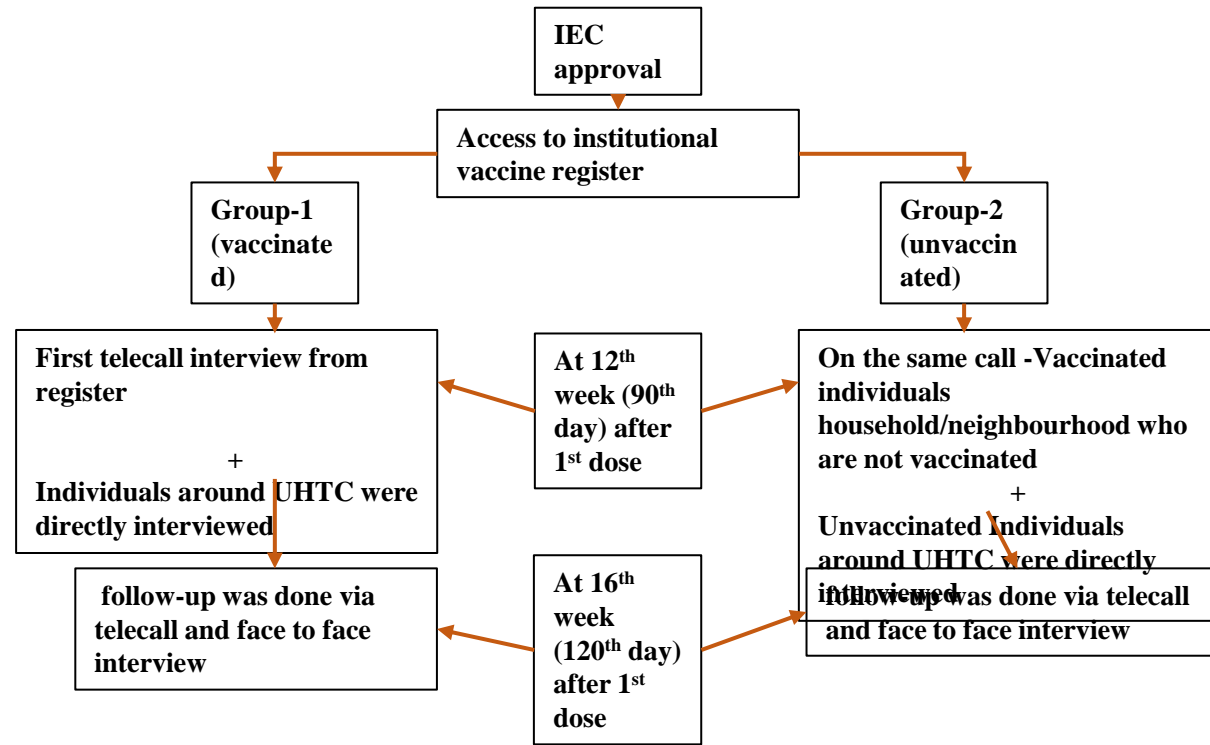
**GROUP-2**  
Unvaccinated group

(Household members/neighbour who are not vaccinated was found and interviewed via telecall)

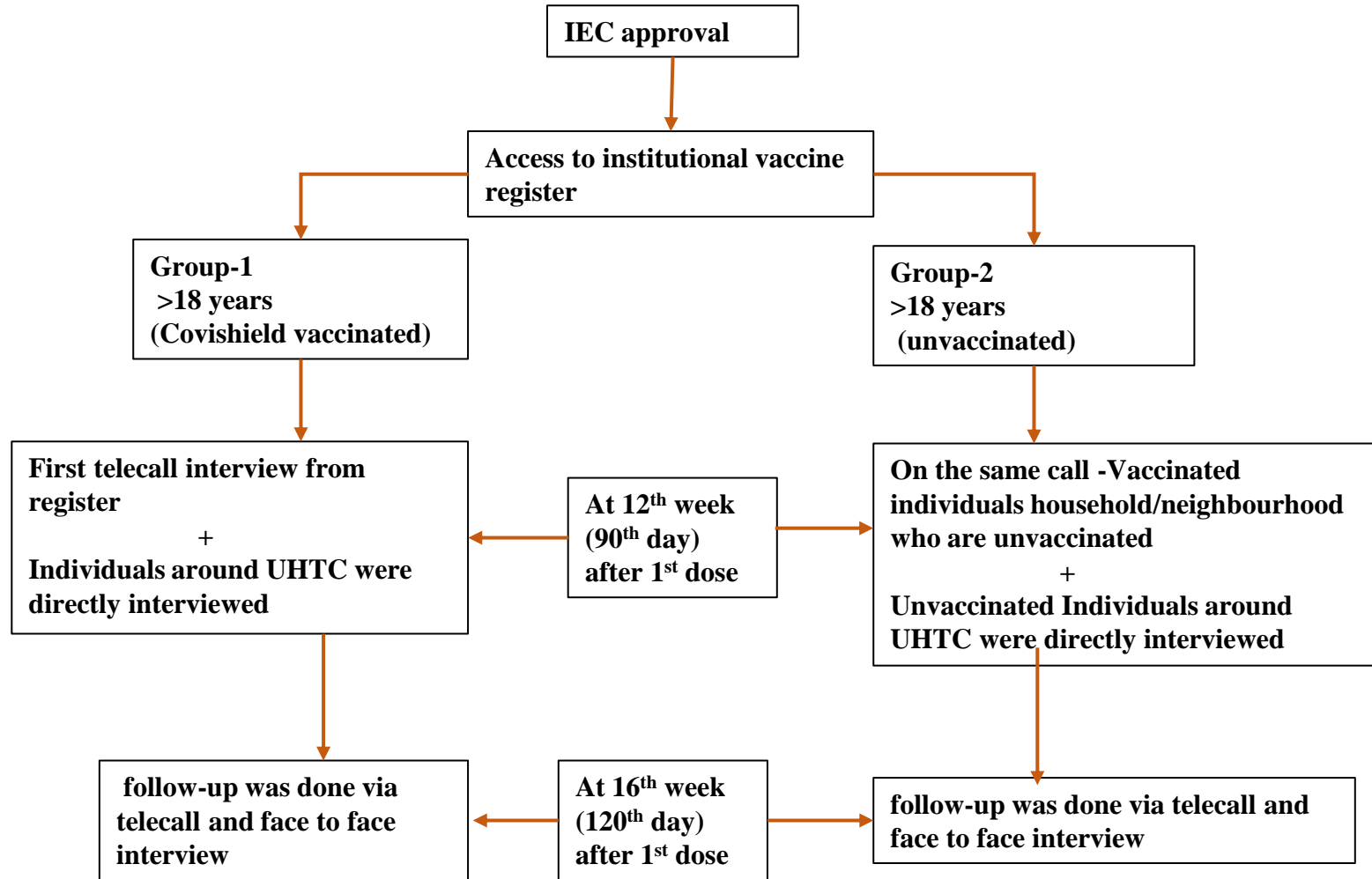
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Households from the UHTC (Ajmera) sectors were directly interviewed at their residence

Second follow-up was done via telecall on 120<sup>th</sup>day (16weeks) from 1<sup>st</sup> dose of vaccination



and in addition, to assess the severity, their frequency after receiving the first and /or second dose of COVID-19 vaccine.



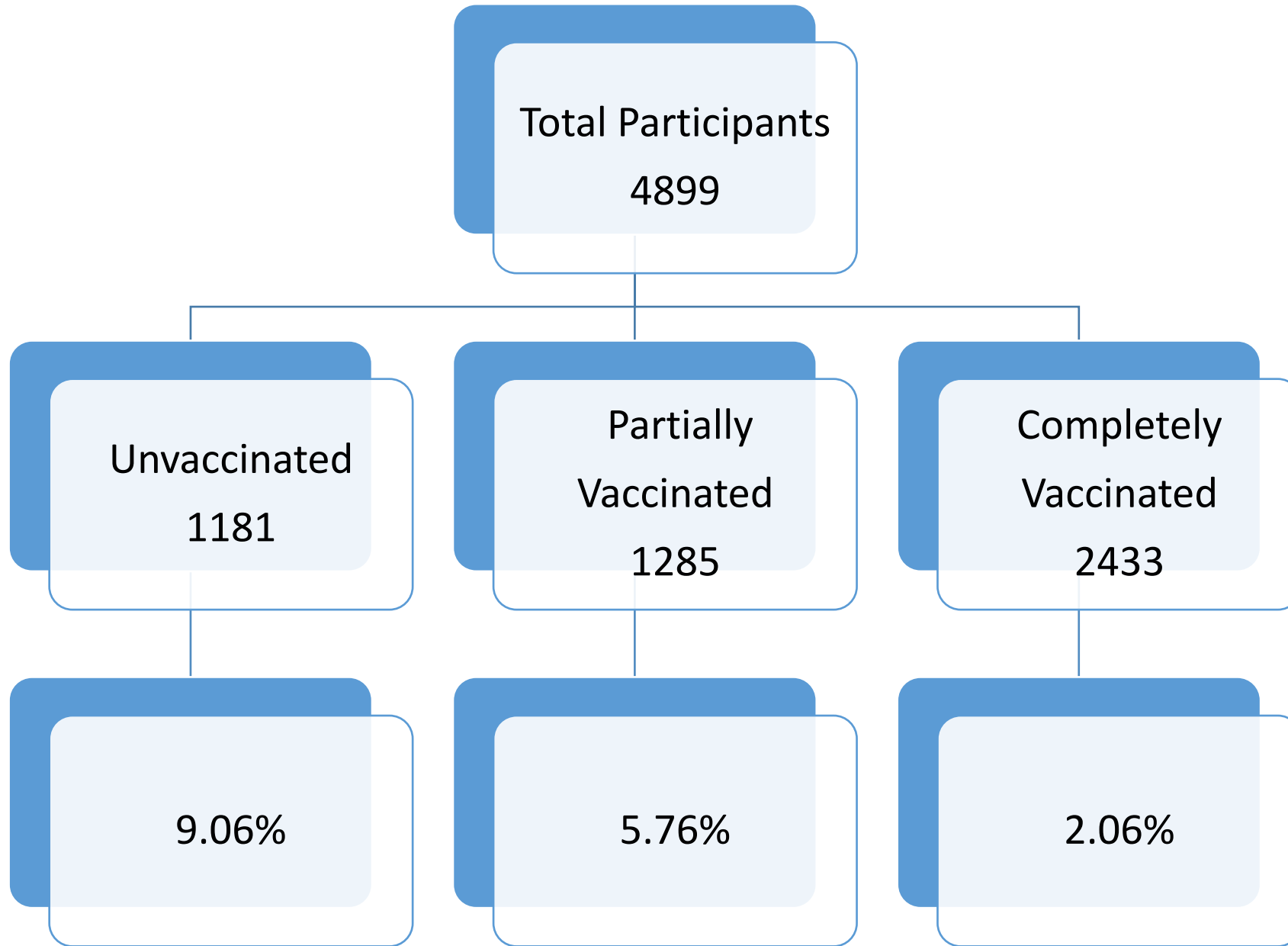
# Data Analysis

- Data will be entered in MS Excel.
- Analysis will be done using Epi Info v7.4.2.0 and WinPepi 11.38.
- Quantitative data will be presented in the form of Mean, SD
- Qualitative data in terms of number and percentages
- Appropriate tests of statistical significance such as chi-square, t test and logistic regression will be performed

# Interim results

- A total of 4899 participants took part in the study of which 1,181 were unvaccinated, 1,285 are partially vaccinated and 2,433 are completely vaccinated.
- Study showed that the attack rate in unvaccinated group is 9.06%, 5.76% among partially vaccinated and 2.06% in completely vaccinated participants.
- The disease severity was found to be 0.51% in unvaccinated and 1.1% in partially vaccinated, 0.32% in fully vaccinated in moderate and severe cases.

**Attack  
rate**



# Data Analysis in Epi-Info 7

|                               | Have you been tested positive for COVID-19 Infection |                |               |
|-------------------------------|--|----------------|---------------|
| NO OF DOSES OF VACCINE TAKEN: | Covid negative                                       | Covid positive | Total         |
| <b>Unvaccinated</b>           | 1074   | 107            | 1181          |
| Row%                          | 90.94%   | <b>9.06%</b>   | 100.00%       |
| Col%                          | 23.01%   | 46.32%         | <b>24.11%</b> |
| <b>Partially vaccinated</b>   | 1211   | 74             | 1285          |
| Row%                          | 94.24%   | <b>5.76%</b>   | 100.00%       |
| Col%                          | 25.94%   | 32.03%         | <b>26.23%</b> |
| <b>Completely vaccinated</b>  | 2383   | 50             | 2433          |
| Row%                          | 97.94%   | <b>2.06%</b>   | 100.00%       |
| Col%                          | 51.05%   | 21.65%         | <b>49.66%</b> |
| <b>TOTAL</b>                  | 4668   | 231            | <b>4899</b>   |
| Row%                          | 95.28%   | 4.72%          | 100.00%       |
| Col%                          | 100.00%  | 100.00%        | 100.00%       |

| Chi-Squared | df | Probability |
|-------------|----|-------------|
| 91.0572     | 2  | 0           |





# Conclusion

- The unvaccinated group has higher incidence of acquiring covid-19 infection when compared to partially and fully vaccinated participants, showing that vaccination conferred protection against infection.
- However there appears to be no relation in the severity of infection and vaccination.

# Take home message

- Vaccine reduces infection
- This is just a Preliminary result and follow-up data is needed to substantiate the Absolute finding of this study

# LIMITATIONS

- Recall bias – on the date of vaccination and infection
- Response bias – Both via telecall and direct data collection
- Survivor bias (mortality not measured)
- Follow-up period is also limited to 1 month after the start of the study

# **IMPLICATION**

- ❖ To observe the effectiveness of Covid-19 vaccine in preventing SARS CoV2 infection and severity of disease.

# **BENEFITS**

- ❖ Can help formulate appropriate guidelines and protocols based on the findings from the study.

# QUESTIONNAIRE

[..\Downloads\study 2.Questionnaire - Google Drive.pdf](#)

# CONSENT AND PIS

[study-2\consent\pis and consent.pdf](#)

# References

1. <https://integrisok.com/resources/on-your-health/2021/may/herd-immunity>
2. Olliaro P, Torreele E, Vaillant M. COVID-19 vaccine efficacy and effectiveness—the elephant (not) in the room. *The Lancet Microbe*. 2021; published online April 20. [https://doi.org/10.1016/S2666-5247\(21\)00069-0](https://doi.org/10.1016/S2666-5247(21)00069-0).



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***THANK YOU***

