



IMMUNOGENIC EFFICACY OF COVISHIELD VS COVAXIN AMONG HEALTHCARE WORKERS AT JLN MEDICAL COLLEGE, AJMER

Clinical Microbiology

Dr. Antima Choudhary	Senior Resident, Department Of Microbiology , Dr. S.n. Medical College, Jodhpur, Rajasthan, India
Dr. Deepshikha Meghwal	Senior Resident , Department Of Pathology , Dr. S.n. Medical College, Jodhpur, Rajasthan, India
Dr. Taruna Chowdhary	Ap, Department Of Anatomy , Dr. S.n. Medical College, Jodhpur, Rajasthan, India
Dr. Laxman*	Ap, Department Of Anaesthesia, Government Medical College, Nagaur, Rajasthan, India *Corresponding Author

ABSTRACT

Since being declared a global pandemic, coronavirus disease 2019 (COVID-19) has led to millions of cases and deaths worldwide. Health care workers are a high-risk population due to patient contact hence studies are needed to examine seroprevalence of Anti-SARS CoV-2 IgG antibodies among healthcare workers. A prospective study was conducted from November 2021 to April 2022 on 160 healthcare workers. Informed consent was obtained from each participant. The study protocol was approved by the Ethics Committee of JLN Medical College, Ajmer. Blood samples were collected and separated serum were analysed with ELISA to detect IgG antibody status and a questionnaire was filled to check vaccination status of participants. Out of 106 HCWs who had taken covishield vaccine 62 (58.5%) were found positive for ANTI SARS CoV-2 IgG Antibody. Out of 54 HCWs who had taken covaxin 33 (61.1%) were found positive for IgG Antibody. This study reports almost same prevalence of Anti-SARS CoV-2 IgG antibodies for both vaccines (Covishield 59% Vs Covaxin 61%) among healthcare workers (HCWs). All participants were fully vaccinated(2 doses).

KEYWORDS

ELISA, HCW's, SNMC , SARSCoV-2

INTRODUCTION

An "unknown viral pneumonia" related to a local sea food wholesale market was reported in WUHAN CITY, CHINA. In just 2-3 months the virus has spread all over the world. Earlier It was named Severe Acute Respiratory Syndrome Coronavirus-2(SARS-CoV-2). The pneumonia caused by Severe Acute Respiratory Syndrome Coronavirus-2 is named Corona Virus Disease 2019 (COVID-19). SARS-CoV-2 was rapidly transmitted among humans, spreading to different countries around the world. On January 30, 2020, WHO notify a worldwide public health alert regarding the emergency of a new epidemic viral disease¹. On February 11, 2020, WHO announced the name for the epidemic disease caused by SARS-CoV-2: coronavirus disease 2019 (COVID. 19) and declared, on March 11, 2020, a pandemic state². SARS-CoV-2 infection is asymptomatic and, in that case, the individual will not need medical support. However, asymptomatic patients are a crucial source of spread of infection. In symptomatic cases, symptoms of COVID-19 are nonspecific and the clinical presentation is similar to SARS-CoV infection. The most commonly reported symptoms are fever, dry cough, dyspnoea and fatigue. Non-respiratory symptoms (e.g. diarrhea, nausea, vomiting, headache and muscle pain) are usually uncommon. It is known that in some people 3 the infection can worsen, need hospitalization and even referral to the intensive care unit (ICU)³.

According to World Health Organisation guidance, the respiratory tract specimen with nasal or oropharyngeal swab has been used to diagnose COVID-19 using real time reverse transcription polymerase chain reaction (RTPCR) as the gold standard. Healthcare workers (HCWs), including doctors, nurses and other paramedical staff, are the leading frontline personnel of a medical health care system. Due to the prolonged period of exposure, HCWs are the most vulnerable cohort at a high risk of COVID-19 infections compared to the general population⁴. Infected HCW may pose risk to patients, family members and to the community as well. Therefore, the safety of HCW is essential to safeguard continuous patient care. Serology can provide more information on SARS CoV-2 infection as an antibody response of IgG formed following infection⁵. India introduced a mass COVID-19 vaccination programme (Covishield and Covaxin) with two candidate vaccines from 16 January 2021 after the Emergency Use Approval⁶. The Phase III data for Covishield from randomized clinical trials (RCTs) shows that the vaccine was safe and effective. However, there is still a paucity of information as to the level of immune response this novel vaccine elicits, both at a humoral and cellular level in the

community. We undertook this study to determine the seroprevalence of IgG antibodies in SARSCoV-2 among vaccine-naïve health care workers in our tertiary care hospital and to further describe the impact of vaccination roll-out on COVID-19 antibody prevalence among HCW. This study investigates the seroprevalence of Anti SARS CoV-2 IgG antibodies among healthcare workers of JLN Medical College, Ajmer. Importantly, understanding the correlation between seropositivity or antibody levels and protection against re-infection, as well as the duration of protective immunity⁷.

Methodology-

A prospective cross sectional study was conducted on 160 Health care workers of JLN Medical College and hospital, Ajmer, Rajasthan. Health care workers of all age groups and both sexes were included with informed consent. An informed consent was taken from all health care workers. History taking, relevant clinical findings were taken for the same study population. 5 ml of venous blood was collected under aseptic precautions. Serum was separated. Clear serum was pipetted out in labelled sterile vials and stored at -80°C until further testing. The stored serum was thawed before starting testing around half to one an hour. Ethical Approval was taken before the start of the study from Institutional Ethical Committee of Hospital. Estimation of specific IgG antibodies against SARSCoV-2 was carried out using an enzyme-linked immunosorbent assay (ELI Safe Covid-19 IgG ELISA detection kit, HIMEDIA) according to the manufacturer's instructions. Statistical analysis- The questionnaires were initially checked for completeness. The data when entered into Microsoft Excel after preparing a Master-chart. Data analysis was done using licensed SPSS software version 21.0 (Chicago, Illinois). Univariate analyses was done and the results were presented with the help of tables, text, bar-diagrams and pie-charts. Categorical variables were expressed in frequency and percentages. As for continuous variables mean and standard deviation were used. Chi-square test and t- test were used to calculate the statistical differences between categorical and continuous variables respectively. A p- value of ≤ 0.5 was considered as statistically significant.

RESULTS-

In cases out of 95 positive HCWs, majority (54%) falls in 21-30 yrs of age group and 65 negative HCWs, majority (67%) fall in same 21-30 yr of age and this relation is not significant group.

out of 95 positive HCWs 48% were male and 51% were female. Out of

65 negative HCWs, majority (52%) were female and this relation is not significant.

Vaccine Wise Distribution Of Cases

Type of vaccination	IgG Antibody			
	Positive		Negative	
	N	%	N	%
Covishield	62	65.26	43	67.19
Covaxin	33	34.74	21	32.81
Total	95	100.00	64	100.00

Chi square 0.063, P value 0.801 (NS)

Out of 105 (covishield vaccine), 65% and 67% were positive and negative respectively for IgG antibody for SARS-CoV-2. Out of 54 (covaxin), 34% and 32% were positive and negative respectively for IgG antibody for SARS CoV-2 and this relation is not significant.

Analysis of various AEFIs of cases

AEFI	IgG Antibody			
	Positive		Negative	
	N	%	N	%
Fever	32	33.68	21	32.31
Myalgia	50	52.63	37	56.92
Pain at injection	20	21.05	9	13.85
Headache	1	1.05	1	1.54
Nil	31	32.63	18	27.69

Table shows that HCWs, positive for IgG antibody had myalgia 52%, fever 33% and 32% had no AEFIs. Out of 160 HCWs 30 took precaution dose and out of 30, 21% were positive for IgG antibody.

DISCUSSION AND CONCLUSION

Since the emergence of SARS CoV-2, it pose a continuous threat to human health since they appeared on a regular and unpredictable basis. There are so many mutant strains detected in india but still the Covishield and covaxin work against them. Several studies concluded that Covishield is more effective than covaxin but this study shows reports almost same prevalence of Anti-SARS CoV-2 IgG antibodies for both vaccines (Covishield 59% Vs Covaxin 61%) among healthcare workers (HCWs).

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