

An Observational Research on Vaccination Recipients from Various Occupations about COVID Behaviors, Side Effects Following VaccinationPradeep Sukla¹, Anjana Niranjana², Kalpana Arya³, Shubhanshu Gupta⁴¹Professor and Head, Dept. of Community Medicine, GMC, Datia²Assistant Professor, Dept. of Community Medicine, SRVS Medical College, Shivpuri³1st Year Post Graduate, Dept. of Community Medicine, GMC, Datia⁴Assistant Professor, Dept. of Community Medicine, GMC, Datia

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Abstract

Background: Coronavirus has been an important zoonotic pathogen for its emerging and re-emerging potential. **Objectives:** To evaluate adherence to COVID appropriate behaviours post vaccination among workers based on risk level against COVID-19 infection at workplace. To identify AEFI post-COVID vaccination among vaccinated subjects.

Methods: It was an Observational study was conducted under the Department of Community Medicine, GMC, Datia among COVID-19 Vaccine Recipients of different Occupations, over a period of three months, after obtaining informed consent. The total sample size required for carrying out the present study is 384 and online data collection was done using snowball sampling method.

Results: Of the total number of participants, over half (55%) fell into the low-risk exposure category, and over 45% were in the medium to very high-risk exposure category for the COVID-19 in their line of work. Of the total individuals included in the study, men made up more than half (51.2%) and women made up slightly less (48.8%). Of the total participants, 78.3% practice frequent hand washing for at least 20 seconds, followed by 18.2% who practice hand washing sometimes and 3.6% who do not wash their hands at all.

Conclusion: It is important to maintain public knowledge of AEFI, AEFI reporting, and adherence to COVID-appropriate practices even after vaccination.

Keywords: COVID-19, Covishield, Covaxin, AEFI.

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Introduction

The coronavirus has the ability to emerge and re-emerge, making it a significant zoonotic pathogen. In Wuhan, China, toward the end of December 2019, a novel coronavirus species known as 2019-novel coronavirus (nCoV) was discovered. The 2019 CoV disease outbreak (COVID-19) quickly spread throughout China and become a full-fledged epidemic. Since then, the illness has spread internationally and is now overwhelming medical institutions, even in nations with high incomes [1]. The World Health Organization (WHO) designated COVID-19 as a Public Health Emergency of International Concern (PHEIC) on January 30, 2020, in accordance with International Health Regulation (IHR) [2]. Interestingly, a student from Wuhan University in China who was on vacation returned to Kerala in southern India on the same day that India reported the first index case of COVID-19 [3].

Although none of the vaccinations is 100% effective, they both offer protection against COVID-

19 infection. Following vaccination, both vaccines produce side effects (AEFI). In addition to minor adverse events that include mild fever with or without chills, mild headaches, muscle soreness, weakness throughout the body, and local pain or tenderness at the injection site that lasts for less than two days, the Indian government has informed about the updated list of adverse events that occur after receiving an indigenous COVID vaccination, specifically COVISHIELD [4,5].

India faced a disastrous new second wave between April and June 2021, despite best attempts. The virus reached a terrible milestone on May 4, 2021, when it surpassed 20 million cases with a new range of non-specific symptoms and about 226,188 deaths [6]. Because of this, the risk of exposure differs according on the profession. While it is well known that close physical contact with COVID patients puts frontline workers at higher risk, there is a dearth of data about other professions, especially those in non-healthcare sectors. The current study intends to

assess acceptable behaviors related to COVID-19, AEFI, and re-infection among study participants in various occupational categories following COVID-19 immunization.

Material and Methods

It was an Observational study was conducted under the department of Community Medicine, GMC, Datia among COVID -19 Vaccine Recipients of different Occupations, over a period of three months, after obtaining informed consent. The total sample size required for carrying out the present study is 384 and online data collection was done using snowball sampling method.

Sample Size calculation & Sampling method:

As there is no comprehensive published data available on post COVID vaccination evaluation among vaccine recipients in different occupational groups, the minimum sample size required for the present study is computed assuming factors considered as 50% by using the following formula:

$$N = (1.96 \times 1.96 \times P \times Q) / D^2$$

Where,

P is proportion of factors as 50%

Q=100-P = 50%

D is allowable error taken as 5% considering 95% confidence level

N = 384

Thus, the total sample size required for carrying out the present study is 384 and online data collection was done using snowball sampling method. Vaccinated subjects among different occupational groups based on risk level against COVID-19 infection at workplace.

Table 1: Distribution of Study subjects according to Risk involved in Occupation against COVID-19 (N=390)

Occupational Risk against COVID-19	No. (N=390)	Percent (%)
Very high/High risk	110	28
Medium risk	68	17
Low Risk	212	55

As per table 1 the mean age of participants ranged from 18-78 years with mean value of 36.7 years and SD of 14.4 years. Out of the total participants, more than half (55%) belongs to low risk of exposure, and around 45% were having medium to very high risk

Inclusion Criteria:

1. Fully or partially vaccinated subjects
2. Having internet access
3. Can read, understand, and write in English and/or Hindi language.
4. Willing to fill online google form.

Exclusion Criteria: Those who do not give consent

An online, pre-tested, semi-structured, anonymous google questionnaire was used to collect information on study variables. The link of the pre-designed Google questionnaire was sent, to all those subjects fulfilling the inclusion criteria and providing online informed consent, through different online platforms during the data collection period. Subjects vaccinated against COVID-19 were targeted to participate in the survey by snowball sampling. Institutional Ethical Committee approval was obtained before initiating the study. Online written informed consent was obtained from all consenting subjects prior to the initiation of data collection.

Statistical Analysis:

Data was collected in the google forms, and transferred to excel sheet and SPSS software (version 20.0). Percentages and proportion were calculated for all the variables, means and standard deviation was calculated for continuous variables, while Chi-square test was applied for categorical variables. A *p*-value of <0.05 is considered as statistically significant.

Results

exposure category in occupation against the COVID-19. Out of the total participants enrolled in the study more than half (51%) were males, and a little less proportion was of females (49%).

Table 2: Distribution of study subjects according to the mask hygiene

Variable	Occupational Risk against COVID-19			
	Very high/ high Risk (N=110)	Medium Risk (N=68)	Low Risk (N=212)	Total (N=390)
Type of mask worn				
N-95	23 (20.9)	42 (61.8)	50 (23.5)	114 (29.4)
Surgical mask	46 (41.8)	12 (17.6)	29 (13.6)	88 (22.3)
Cloth mask	41 (37.3)	14 (20.6)	122 (57.3)	176 (45.3)
Do not wear mask	0 (0.0)	0 (0.0)	12 (5.6)	12 (3.1)
Chi-square = 83.69; p-value = <0.01				

How many masks do you wear				
No of masks	Very high/ high Risk (N=110)	Medium Risk (N=68)	Low Risk (N=201)	Total (N=379)
One	71 (64.5)	39 (57.4)	141 (70.1)	251 (66.2)
Two or more	39 (35.5)	29 (42.6)	60 (29.9)	128 (33.8)
Chi-square=14.20; p value=0.02				
When do you wear mask				
While only going out	92 (82.7)	63 (92.6)	177 (88.1)	332 (87.6)
Both at home & while going out	17 (15.5)	3 (4.4)	18 (8.9)	38 (10)
Wear occasionally while going out at crowded places	1 (0.9)	2 (2.9)	6 (3)	9 (2.4)
Chi-square=15.569; p-value= 0.016				

When asked what kind of masks they wore, the majority of participants—45.3%—said they wore cotton masks, followed by N 95 (29.4%) and surgical masks—22.3%). However, 3.1% said they didn't wear any kind of mask at all, and they were all in the low risk category. The majority of participants in the high risk category (41.8%) and

the majority of those in the medium risk category (61.8%) wore surgical masks, whereas the majority of those in the low risk category (57.3%) wore cloth masks. It was discovered that there was a statistically significant difference. The majority of individuals (66.2%) opt to wear a single mask, while 33.8% chose to wear two or more masks.

Table 3: Distribution of Study Subjects according to Hand Hygiene

Variable	Occupational Risk against COVID-19			
	Very high/ high Risk (N=110)	Medium Risk (N=68)	Low Risk (N=213)	Total (N=391)
Practice Hand washing with soap and water minimum for 20 sec				
Yes, frequently	91 (82.7)	46 (67.6)	169 (79.3)	306 (78.3)
Yes, but rarely	12 (10.9)	18 (26.5)	41 (19.2)	71 (18.2)
Not at all	7 (6.4)	4 (5.9)	3 (1.4)	14 (3.6)
Chi-Square-13.34; p-value- 0.01				
Practice Sanitization with alcohol-based sanitizer for minimum 20 sec				
Yes, frequently	90 (81.8)	44 (64.7)	129 (60.8)	263 (67.3)
Yes, but rarely	14 (12.7)	22 (32.4)	61 (28.6)	97 (24.8)
Not at all	6 (5.5)	2 (2.9)	23 (10.8)	31 (7.9)
Chi-Square=19.43; p-value=0.01				

Of the total participants, 78.3% practice frequent hand washing for at least 20 seconds, followed by 18.2% who practice hand washing sometimes and 3.6% who do not wash their hands at all. The highest percentage of persons who were at high or very high risk washed their hands often (82.7). The majority of participants with medium occupational risk often

washed their hands, compared to about one-fourth who did so infrequently and 5.9% who did not wash their hands at all. Just 1.4% of people in the low-risk category did not wash their hands at all, compared to 80% who did so frequently and 20% who did so infrequently.

Table 4: Distribution of study subjects according to social distancing

Variable	Occupational Risk against COVID-19			
	Very high/ high Risk (N=110)	Medium Risk (N=68)	Low Risk (N=213)	Total (N=391)
Public Gathering				
Yes	7 (6.4)	14 (20.6)	44 (20.7)	65 (16.6)
Fewer times	17 (15.5)	12 (17.6)	25 (11.7)	54 (13.8)
No	86 (78.2)	42 (61.8)	144 (67.6)	272 (69.6)
Chi-Square=13.183; p-value=0.010				
Maintaining 6 Feet distance				
Yes	57 (51.8)	45 (66.2)	184 (86.4)	286 (73.1)
Sometimes	21 (19.1)	17 (25)	24 (11.3)	62 (15.9)
No	32 (29.1)	6 (8.8)	5 (2.3)	43 (11)
Chi-Square=67.065; p-value=0.001				

Out of total study subjects less than one fourth (16.6%) of the participants attend public gathering post vaccination, around 70% did not attend any public gathering, and 13.8% attended fewer times. Least proportion among those

who attended public gathering was of very high/high risk individuals (6.4%) followed by medium and low risk. ($\chi^2=13.183$; p-value=0.010).

Table 5: Distribution of subjects according to vaccination related variables

Variables	Occupational Risk against COVID-19			
	Very high/High risk (N=110)	Medium Risk (N=68)	Low Risk (N=213)	Total (N=391)
Type of vaccine				
Covishield	90 (81.8)	61 (89.7)	162 (76.1)	313 (80.1)
Covaxin	18 (16.4)	5 (7.4)	50 (23.5)	73 (18.7)
*Mixed	2 (1.8)	2 (2.9)	1 (0.5)	5 (1.3)
Chi square value=11.681; p-value-0.001				
No of dose received at the time of survey				
Only one dose	46 (41.8)	17 (25.0)	160 (75.1)	223 (57.0)
Both doses	64 (58.2)	51 (75.0)	53 (24.9)	168 (43.0)
Chi square value-67.292; p- value- 0.020				

Table-5 reflects that out of the total participants more than three fourth (80.1%) received covishield, less than one fourth (18.7%) received covaxin, and only (1.3%) received mixed dose of vaccine.

Table 6: Distribution of study subjects according to type of vaccine and no of doses received at the time of survey

AEFI	Type of vaccine			Total (N=390)
	Covaxin (N=73)	Covishield (N=313)	Mixed dose (N=5)	
Present	60 (82.2%)	266 (85%)	4 (80%)	330 (84)
Absent	13 (17.8%)	47 (15%)	1 (20%)	60(16)
Chi-square.425; p-value- 0.809				

The above table shows that 84 % of the participants reported at least one AEFI after vaccination. No side effect was reported by 16% of the subjects. There was no major difference in the occurrence of AEFI according to the type of vaccine.

Discussion

Across all sub-groups, subjects reported wearing one mask mostly while going out. Mukherjee et al and few studies conducted similar studies by telephonic survey and found 61.2% of the respondents were using facemask. Among the participants, those aged between 50 and 59 years (68%) wore facemasks most frequently followed by 19-29 years age group (52.8%). [7]

In the present study, majority of the subjects reported frequently hand washing (78.3%) with soap and water and/or hand sanitization (67.3%) with alcohol-based sanitizer for at-least 20 seconds. Singh et al. conducted a literature review on hand sanitizer, an alternative to hand washing. They included 22 published articles, 17 were included in the review and observed that hand sanitizer use was increased during COVID pandemic [8].

In the present study, most study subjects did not attend any public gathering post-vaccination and were practicing safe physical distancing of six feet post-vaccination. In the present study, out of the total vaccinated subjects, majority received, COVISHEILD, followed by COVAXIN. Most in low-risk category received only one dose (partially

vaccinated), while majority in medium and very-high and high risk received both doses (completely vaccinated).The rate of re-infection among the COVID subjects was reportedly 4.8%. ICMR conducted a study on 1300 participants and found 4.5% as re-infected cases of COVID-19 infection. [9]

In the present study, most of the participants reported at least one AEFI; majority was the recipients of COVISHEILD. The most frequently reported AEFI was common minor AEFIs that lasted for <2 days viz., fever, followed by mild pain at injection site, mild muscle pain, and mild generalized weakness. Most AEFIs were reported after receiving 1st dose than the 2nd dose. Jeon et al. conducted a study on 1,503 vaccinated HCWs, out of which 994 reported AEFI. The most common AEFI were tenderness at the injection site (94.5%), fatigue (92.9%), pain at the injection site (88%), and malaise (83.8%). The severity of most AEFI was mild-to-moderate, and the severity of AEFI were seen less in the older age group. There was no serious AEFI reported in the study. [10]

Conclusion

The majority of workers who received vaccinations across all subcategories of COVID-19 infection risk at their place of employment in the current study adhered to the practice of COVID appropriate behaviors after immunization and had common mild adverse events (AEFIs) with low rates of re-infection. It is urgently necessary to administer two

doses of the COVID vaccine to everyone. It is important to keep the public informed about AEFI, AEFI reporting, and maintaining COVID-appropriate behaviors even after immunization.

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