

Original Research Article

Post vaccination adherence to COVID appropriate behaviours

Chhaya Mittal, Abhishek Kumar Mishra*, Tanveer Bano, Arun Kumar

Department of Community Medicine, L. L. R. M. Medical College Meerut, Uttar Pradesh, India

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***Correspondence:**

Dr. Abhishek Kumar Mishra,

E-mail: drabhishekmishra@gmail.com

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ABSTRACT

Background: COVID-19 is the most important public health problem of the world presently. Many people require hospitalization after infection and for some people disease is fatal. COVID vaccination and COVID appropriate behaviours are the most effective way to prevent disease. In the light of new mutant strains of Corona virus in some countries, e.g. omicron variant, against that vaccine may not be so effective, the importance of COVID appropriate behaviour has been increased further. In this connexion this study was planned to assess the post COVID vaccination covid appropriate behaviours (CAB) of vaccine beneficiaries in a vaccination centre in Northern India. To evaluate the post vaccination COVID appropriate behaviour and protective efficacy of two most commonly used vaccines in India.

Methods: Present cross-sectional study was done among beneficiaries of COVID vaccines at vaccination centre LLRM Medical college. After institutional ethical clearance and informed consent patients were asked about post vaccination COVID appropriate behaviours and severity of COVID symptoms they experienced after being COVID positive. The symptoms of COVID-19 were compared in pre and post vaccination group. Simple random sampling was used to select beneficiaries. A total 391 patients submitted the responses. Information thus collected on predesigned Google form.

Results: Participants showed good knowledge regarding CAB, and bearing mask was most commonly followed CAB. Beneficiaries agreed that they need to follow CAB post vaccination too.

Conclusions: A total of 93.1% vaccine beneficiaries were aware of COVID appropriate behaviours. Bearing face mask and physical distance were most commonly used COVID appropriate behaviours. Approximately 10% of beneficiaries followed COVID appropriate behaviours less promptly post vaccination.

Keywords: COVID-19, COVID vaccination, COVID appropriate behaviour, Vaccine beneficiaries, Cross sectional study

INTRODUCTION

COVID-19 is the most important public health problem of today's world caused by a new corona virus called SARS-CoV-2. Corona viruses may cause illness in animals or humans. In humans, they cause respiratory infections ranging from the common cold to more severe diseases such as middle east respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS). Presently discovered corona virus causes corona virus disease

(COVID-19).¹ WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of 'viral pneumonia' in Wuhan, people's republic of China.² The outbreak was declared a pandemic by the World health organization on 11 March 2020.³ The spread of SARS-CoV-2, the causative agent of COVID-19, has resulted in an unprecedented global public health and economic crisis.⁴ Around 1 out of every 6 people who gets COVID-19 becomes seriously ill and develops difficulty breathing. Older people, and those with

underlying medical problems like high blood pressure, heart problems or diabetes, are more likely to develop serious illness.¹ Being a new virus, without previous immunological experience all people are susceptible to contact disease. In most of countries productive age group which is having higher mobility for various economic activities is the easy prey for this viral illness. Before the advent of vaccination, many countries-imposed country wide lockdown. In India lockdown was imposed by Indian Government from 24 March 2020 (first phase) which was subsequently extended till 31st May 2020 and again in April-June 2021. Government also advised many COVID appropriate behaviours.⁵ These efforts slowed down rate of transmission and protected vulnerable groups. In May 2021 United States announced that vaccinated persons are exempted to wear mask.⁶ However it is a well known fact that COVID cases increased exponentially in the country and subsequently they again revised guidelines and made mask mandatory even for vaccinated person while using transport in open areas too. Further in light of new strain of corona virus for e.g. Omicron strain of corona virus, many countries are presently suffering from surge in COVID cases. There are fresh COVID waves in many countries. As per recent reports Omicron strain is having as much as approximately 40 mutations in spike protein and other antigen. Reports are also there that presently used vaccines may not be as effective against this strain of Corona virus.⁷ So COVID appropriate behaviours will remain relevant along with COVID vaccination till very end in the course of disease or elimination of disease. As for as India is concerned, country has recently we have crossed milestone of 175 Crore vaccination. Presently vaccines are being injected for all aged 12 years or more.⁸ Vaccination protects the people from severe disease but on the other hand it does not prevent infection in vaccinated person. The perfect methods which break chain of transmission are COVID appropriate behaviours. This scenario is further more relevant with the advent of virus mutation as vaccination have reduced efficacy in such case. So, this makes COVID appropriate behaviours mandatory in present light of evidence. With the background of above facts, a study has been planned to evaluate the adherence of COVID appropriate behaviours post vaccination.

Aims and objectives

Aim and objectives of current study were to evaluate adherence to COVID appropriate behaviours post vaccinations, to evaluate awareness regarding COVID appropriate behaviours, gender-based analysis of CAB averters and protection offered by vaccines to prevent severe disease.

METHODS

Present cross-sectional study was conducted in Meerut. The study period was from Jan 2021 to June 2021. The respondents of the study were vaccination beneficiaries

(received either one or both doses). Beneficiaries list was obtained from COVID vaccination centre LLRM Medical College. All beneficiaries of vaccination centre LLRM medical college irrespective of age sex religion and who gave consent were included in the study. Institutional ethical clearance was taken to conduct study. Sample size was calculated assuming prevalence of post-vaccination symptoms as 50%, 5% allowable error and 95% confidence interval using the formulae $N = (1.96)^2 PQ/D^2$. Sample size thus calculated came out to be 384. A total of 384 beneficiaries were selected randomly. A Google form regarding various parameters related to adverse effect following immunization was developed in Hindi. Thereafter all the selected beneficiaries were contacted telephonically and explained in detail about motive of study and information regarding filling and submitting Google form. Response thus collected were analysed statistically. Few respondents who initially refused to provide information, filled and submitted the form later on. Thus total respondents in the study became 391.

RESULTS

In present study total 391 vaccine beneficiaries were interviewed. Out of 391 respondent 58.8 % were females and 41.2% were males. In the study 89% of the participants belong to age group 18-45 years, 8.6% participants belong to age group 45-60 years while rest 2.4% belong to age group more than 60 years. No beneficiary was below 18 years of age. When asked about COVID appropriate behaviours total 93.1% of the vaccine beneficiaries were aware about COVID appropriate behaviours advised by Government of India. Among male beneficiaries 90.7% were aware about CAB while 94.8% of female beneficiaries were aware about CAB. So apparently females were more aware but this difference was statistically not significant (Table 1).

Table 1: Awareness regarding COVID appropriate behaviours.

Awareness regarding CAB	Male N (%)	Female N (%)	Total N (%)
Aware	147 (91.3)	217 (94.3)	364 (93.1)
Unaware	14 (8.7)	13 (5.7)	27 (6.9)
Total	161 (100)	230 (100)	391 (100)

df=1, χ^2 tabulated=3.2, χ^2 calculated=1.36 (p>0.05 non-significant)

When inquired regarding commonest implied COVID appropriate behaviour, wearing mask (96.7%) was most commonly followed CAB among vaccination beneficiaries. Keeping physical distance of 2 yard (90.6%), avoiding larger assemblies (88.9%), proper disposal of mask and clothes and bathing after outdoor visit (84.8%), avoiding family function (83.4%), restaurant eating (80.3%) and cancellation of scheduled travel (77.6%) were other frequently followed CAB (Table 2). Further we inquired that what was impact of

vaccination on COVID appropriate behaviours 90.5% of beneficiaries informed that they continued following CAB as they were following in pre vaccination era.

Table 2: Most frequently adopted COVID appropriate behaviours.

COVID appropriate behaviours	N (%)
Bearing mask	347 (96.7)
Physical distance of 2 yard	327 (90.6)
Avoiding larger assemblies	321 (88.9)
Proper disposal of mask and clothes and bathing after outdoor visit	306 (84.8)
Avoiding family function	301 (83.4)
Restaurant eating and	290 (80.3)
Cancellation of scheduled travel	280 (77.6)

Total 7.2% of the respondent informed that they followed CAB less rigorously in comparison to pre vaccination state. While 2.3% of beneficiaries uttered that they were not following CAB in both pre vaccination and post vaccination stage of their life (Figure 1).

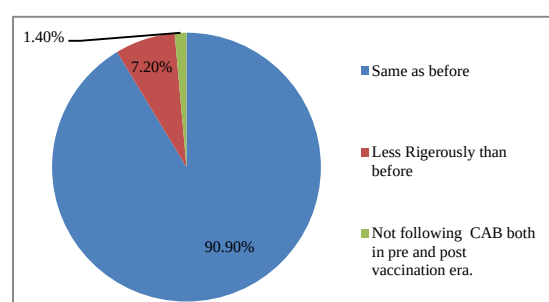


Figure 1: Impact of vaccination on CAB.

When we analysed gender based CAB change post vaccination 94.8% of female beneficiaries continued CAB as before while corresponding value for male beneficiaries was 90.6%. Those who followed CAB less rigorously 57.1% were males and 42.9% were females. These differences were not statistically significant (Table 3).

Table 3: Gender based analysis of CAB post vaccination.

CAB post vaccination	Male N (%)	Female N (%)	Total N (%)
Same as before vaccination	140 (87.0)	212 (92.2)	352 (90.0)
Less promptly post vaccination	16 (9.9)	12 (5.2)	28 (7.2)
Neither before nor after vaccination	5 (3.1)	6 (2.6)	11 (2.8)
Total	161 (100)	230 (100)	391(100)

df=2, χ^2 tabulated=5.34, χ^2 calculated=3.31 ($p>0.05$ non-significant)

In next we asked vaccination beneficiaries that whether you agree that it is essential to follow CAB post vaccination majority of respondent uttered yes (96.7%) while few (2.6%) answered don't know. In the series very few (.8%) said that there is no need to follow CAB post vaccination (Figure 2).

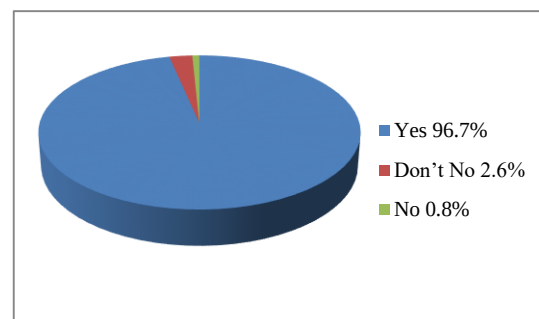


Figure 2: Vaccination beneficiaries response to question that whether it is necessary to follow CAB post vaccination.

Table 4: COVID symptoms in relation to vaccination status.

COVID symptoms	
Pre-vaccination symptoms N (%)	Post-vaccination symptoms N (%)
Fever; 36 (67.2).	Fever; 34 (56).
Body ache; 22 (41.8)	Body ache; 28 (46)
Throat pain; 21(38.8)	Throat pain; 21(35)
Cough; 20 (37.3)	Cough; 23 (37)
Breathlessness; 11 (20.9)	Breathlessness ; 9 (14.6)
Total; 53 (100)	61 (100)

During course of study, we also asked the vaccination beneficiaries where you have been infected with Corona Virus. Total 30.9% (N=121) were infected pre, post vaccination and both stages. Out of these 43.8% (N=53) were infected before vaccination, 50.4% (N=61) were infected after vaccination and rest 5.7% (7) infected both ways. Next, we compared the symptoms they experienced in pre and post vaccination stage. Those who infected before vaccination fever (67.2%) body ache (41.8%) throat pain (38.8%) and cough (37.3%) were predominant symptoms while breathlessness was present in 20.9% of beneficiaries. Similarly, those who infected post vaccination fever (56%) body ache (46%) cough (37%) and throat pain (35%) were predominate symptoms while breathlessness was present 14.6% of beneficiaries. In this connection 5 out of 7 beneficiaries (71.4%) who infected both ways informed that symptoms were more in pre vaccination stage (Table 4). Further we compared the grading of symptoms as per WHO classification for severity of symptoms grading in pre and post vaccination corona virus infection.

In pre vaccination infection 52.6% were asymptomatic, 24% developed mild symptoms, 18.7% developed

moderate symptoms while 4.7% beneficiaries developed severe to very severe symptoms. Similarly, those who infected post vaccination 49.1% were asymptomatic, 23.8 % developed mild symptoms, 22.7% developed moderate symptoms while 3.5% beneficiaries developed severe to very severe symptoms. So apparently severe, very severe patient symptoms were less post vaccination. However, to draw an inference study on a larger sample size is needed.

DISCUSSION

In present study out of total respondent (381) 58.8 % were females and 41.2% were males. Similar trends were reported by Ke'ala Akau. Who in an article informed that in February, the CDC released data on adverse effects during the first month of the COVID-19 vaccine rollout, finding that while women received 61 % of vaccine doses, 72% of the side effects were reported from women.¹¹ In contrast to present study, Mostafa Abohelwa et al in Texas, quoted that as per report of CDC, 50.6% were males and 49.4 % were females were among vaccine beneficiary.¹²

In the study 89% of the participants belong to age group 18-45 years, 8.6% participants belong to age group 45-60 years while rest 2.4% belong to age group more than 60 years. No beneficiary was below 18 years of age. In this relation it is submitted that health care professional were initially vaccinated in India which includes many MBBS students, MD students, BSc nursing and GNM students. So maximum numbers of beneficiaries were in age group of 18-45 years. In our study commonest implied CAB was bearing mask (96.7%) followed by keeping physical distance of 2 yard (90.6%). In comparison to our study contrasting trends were reported by Ashok Kumar et al in a study in Rajasthan where they reported that the most common practiced CAB measure was face cover (57.8%) followed by hand washing (43.75%). Although the study was conducted in small scale workers.⁹

Regarding awareness regarding COVID appropriate behaviours in our study 93.1% of the vaccine beneficiaries were aware about covid appropriate behaviours (90.7% of male and 94.8% of female beneficiaries were aware about CAB). We could not find any study to compare our study however there are some isolated news reports highlighting the importance of CAB. In our study some of the vaccination recipients (121) reported that they became covid positive during different conditions like; before vaccination 53, after vaccination 61 and both ways 7. When compared severity of symptoms, we find that severe to very severe symptoms and breathlessness were more reported in pre vaccination group. Those who became COVID positive both ways support our finding as 5 out of 7 people reported that symptoms were more before vaccination COVID infection. However, it is recommended that study in large sample size is required to draw any inference. We could not find any study to compare.

CONCLUSION

There was a fair knowledge of COVID appropriate behavior among vaccination beneficiaries. Awareness was more in female beneficiaries however the difference was not statistically significant. A fair proportion of beneficiaries also believe that they need to follow CAB post vaccination too. Post vaccination adherence to CAB was seen more in female beneficiaries however this difference was not statistically significant.

Recommendations

Study indicates protective efficacy of vaccines in preventing severe disease however study is needed in much larger population for better comment on it.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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