

ORIGINAL RESEARCH ARTICLE

ACCEPTANCE OF COVID-19 VACCINE AND PATTERN OF SIDE EFFECTS IN NEPALESE CONTEXT: A POST-VACCINE CROSS-SECTIONAL STUDY AMONG HEALTH CARE WORKERS IN A TERTIARY CARE HOSPITAL

Parash Adhikari^{1,*}, Kishor Adhikari¹, Basanta Gauli², Deekshanta Sitaula³

¹School of Public Health, Chitwan Medical College, Bharatpur, Chitwan

²Department of Anaesthesiology and Critical Care, Chitwan Medical College, Bharatpur, Chitwan

³School of Medicine, Chitwan Medical College, Bharatpur, Chitwan

Received: 15 May, 2021

Accepted: 10 Jun, 2021

Published: 19 Jun, 2021

Key words: Acceptance; COVID-19; Covishield; Side-effects; Vaccine.

***Correspondence to:** Parash Adhikari, School of Public Health, Chitwan Medical College, Bharatpur, Chitwan, Nepal.

Email: parashadh@gmail.com

Citation

Adhikari P, Adhikari K, Gauli B, Sitaula D. Acceptance of COVID-19 vaccine and pattern of side effects in Nepalese context: a post-vaccine cross-sectional study among health care workers in a tertiary care hospital. Journal of Chitwan Medical College. 2021;11(36):34-8.

ABSTRACT

Background: First phase of COVID-19 vaccination was initiated in Nepal in January 2021 targeting the frontline health care workers. Vaccine side effects have a significant role in public confidence regarding the vaccine and its uptake. We aimed to determine the acceptability and explore the side effects of first dose of ChAdOx1 nCoV-19 (Covishield) vaccine among the health care workers of Chitwan Medical College.

Methods: We conducted a cross-sectional study among the health care workers at Chitwan Medical College. Total enumeration sampling technique was used and a self-constructed questionnaire was circulated among the health care workers to self-report their socio-demographic information and vaccination experience. Chi square test was done using Statistical Package for the Social Sciences version 20 for statistical analysis and p-value<0.05 was considered significant.

Results: Out of 589 respondents, 537 (91.2%) had received the first dose of Covishield vaccine among which, 424 (78.9%) reported one or more side effects. Majority of them had very mild systemic side effects (55.9%) and injection site related side effects (25.2%). The side effects were more prevalent in <30 years age group than >30 years age group.

Conclusions: Most of the vaccine recipients had very mild side effects which showed that Covishield vaccine has a good safety profile.



INTRODUCTION

Coronavirus disease of 2019 (COVID-19) is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2).¹ SARS-COV-2 transmits from human to human via respiratory droplets leading to a respiratory tract infection that can progress to severe pneumonia, multiple organ failure and fatal complications.² As of May 8 2021, there have been more than 157 million cases of COVID-19 infection globally.³

Vaccine is one of the best armamentaria in public health especially when no effective treatment is available against infectious disease. In Nepal, the Department of Drug Administration (DDA) approved the use of India-made coronavirus vaccine Covishield in the country on January 15 2021.⁴ The first phase of COVID-19 vaccination was initiated in Nepal on January 27, 2021 using the Covishield vaccine.⁵ Covishield is a version of Oxford-AstraZeneca (AZD1222) vaccine that was found to have an average efficacy of 70.4% in randomized controlled trials done across the UK, Brazil and South Africa.⁶ According to data reported to European Medicines Agency (EMA), about 50% participants after Oxford-AstraZeneca vaccination complained of injection-site pain, headache or fatigue.⁷ Very few studies have been

conducted in Nepal regarding the side effects of COVID-19 vaccination. A recent publication has reported mild side effects like myalgia, nausea, tenderness at the injection site, feverish feeling and headache among the health workers after the first dose of Covishield vaccine.⁵ Similarly, minor Adverse Effect Following Immunization (AEFI) was seen in 84.9% of the vaccine recipients after the first dose of vaccine in Patan Academy of Health Sciences (PAHS).⁸ The aim of present study was to determine the acceptability of first dose of Covishield vaccine among health care workers at Chitwan Medical College (CMC), Nepal and explore the patterns of its side effects.

METHODS

A cross sectional study was conducted from February 1, 2021 to February 28, 2021 at Chitwan Medical College (Chitwan, Nepal) to survey the pattern of side effects observed after the first dose of Covishield vaccine. Ethical approval was taken from Institutional Review Committee (CMC-IRC/077/078-202). Self-constructed questionnaire was circulated to all the health care workers after the first phase of Covishield vaccination in Chitwan Medical College. Informed consent was obtained before filling

up the questionnaire. All the staffs who filled the form completely were included in the study. Those who did not consent to participate were excluded from the study. We planned for total enumeration sampling and circulated the questionnaire forms to all the health care workers after they were vaccinated with the first dose. However, only 589 of them consented and returned the completely filled questionnaires.

The questionnaire consisted of socio-demographic section and another section related to COVID-19 vaccination and side effects. The socio-demographic information included age, gender, ethnicity, area of work in hospital, pregnancy/lactating status, previous history of COVID-19 infection and history of co-morbidity. In addition, another section included the information regarding Covishield vaccination status, reasons for not taking vaccination (if not vaccinated), side effects after vaccination and time for development of side effects. Side effects after vaccination were classified as injection site symptoms only, very mild (malaise, myalgia, feverish feeling but no raise in temperature), moderate (vomiting, fever, rigor, chills, shortness of breath) and severe (feeling dizzy, decreased appetite, abdominal pain, enlarged lymph nodes, excessive sweating, itchy skin or rash).

The obtained data was entered by EPI info version 3 and then analyzed by using SPSS version 20.0. Descriptive statistics was used to calculate frequency, percentage, mean, median and standard deviation (SD). Inferential statistics was used to assess the association.

The acceptability rate of the vaccine was compared among the staffs belonging to different areas of work (Clinical/Academic, Administrative and Maintenance/Security) in the hospital. In addition, the side effects were compared between the groups of recipients who had previous history of COVID-19 infection with those who did not have COVID-19 infection in past. Chi-square test was used to test the statistical significance and a p-value of 0.05 was considered significant.

RESULTS

A total of 589 health care workers filled in the questionnaire form. Out of 589 respondents, 409 (69.4%) were females and 180 (30.6%) were males. Majority of them (261, 44.3%) were Brahmin followed by Chhetri (96, 16.3%) and Newar (43, 7.3%). Their mean age was 30.57±8.32 years, ranging between 18 years and 65 years old. More than two-thirds (414, 70.3%) worked in clinical/academic area followed by maintenance/security (130, 22.1%) and administration (45, 7.6%). Eight (1.4%) respondents had co-morbid conditions which were bronchial Asthma (3), hypertension (2), hypothyroidism (2) and hyperuricemia (1). Twenty-three (5.6%) out of 409 female participants were either pregnant or lactating. A quarter (149, 25.3%) of total respondents had previous history of COVID-19 infection, most of them (133, 89.3%) got infected before 90 days (Table 1).

Table 1: Socio-demographic and health-related information of the participants (n=589)

Variables	Frequency (%)
Age (years)	
<25	197 (33.4%)
25-50	374 (63.5%)
50-75	18 (3.1%)
Mean Age	30.57±8.32
Gender	
Female	409 (69.4%)
Male	180 (30.6%)
Ethnicity	
Brahmin	261 (44.3%)
Chhetri	96 (16.3%)
Newar	43 (7.3%)
Dalit	42 (7.1%)
Others	147 (25.0%)
Area of work in hospital	
Clinical/Academic	414 (70.3%)
Administrative	45 (7.6%)
Maintenance/Security	130 (22.1%)
Co-morbidities	
Yes	8 (1.4%)
No	581 (98.6%)
Female who were pregnant/lactating (n=409)	
Yes	23 (5.6%)
No	386 (94.4%)
Previous COVID-19 infection	
Yes	149 (25.3%)
No	440 (74.7%)
Duration since COVID-19 infection (n=149)	
Within last 30 days	3 (2.0%)
30-90 days	13 (8.7%)
More than 90 days	133 (89.3%)

Table 2: Information related to COVID vaccination and its side effects in the study population

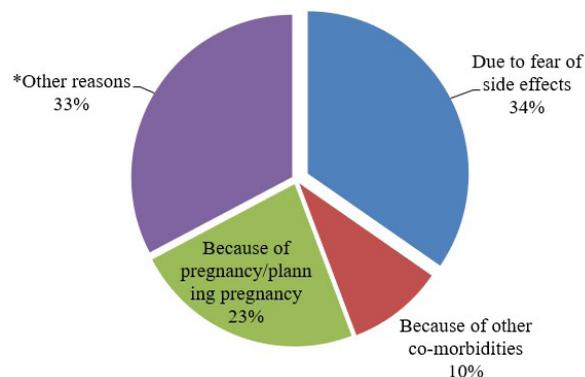
Variables	Frequency (%)
Vaccinated	
Yes	537 (91.2%)
No	52 (8.8%)
Side effects after vaccination (n=537)	
Yes	424 (78.9%)
No	113 (21.1%)
Interval for side effects (n=424)	
Within 6 hours	141 (33.2%)
7-12 hours	211 (49.8%)
After 12 hours	72 (17%)
Severity of side effects (n=424)	
Only injection site symptoms	107 (25.2%)
Very Mild	237 (55.9%)
Moderate	77 (18.2%)
Severe	3 (0.7%)
Taken medications for side effects	
Yes	193 (32.8%)
No	396 (67.2%)

Of 589 respondents, 537 (91.2%) received the first dose of Covishield vaccine whereas 52 (8.8%) did not receive the vaccine. More than three quarter (424, 78.9%) of the vaccine recipients complained of side effects after vaccination. Side effects were seen in between 7-12 hours of vaccination in about half (211, 49.8%) of those 424 respondents. Injection site symptoms were found in 107 (25.2%) participants, very mild side effects in 237 (55.9%), moderate in 77 (18.2%) and severe in 3 (0.7%). One hundred ninety-three (32.8%) respondents took medications (paracetamol/flexon) for the side effects (Table 2).

Figure 1 showed the reasons for not taking the vaccine by the health workers. Among 52 participants who did not receive the vaccine, more than one-third (34%) refused the vaccine due to fear of side effects, 12 (23%) did not take the vaccine due to pregnancy, 5 (10%) due to co-morbid conditions and remaining (33%) due to other reasons like fever during the time of vaccination and missing their name in the list of vaccination.

Table 3 revealed the difference in the rate of vaccination among the staffs working in different areas in hospital

(Clinical/Academic 92.3% vs Administrative 73.3% vs Maintenance/Security 93.8%) ($p < 0.01$). Similarly, there was significant difference in side effects among staffs according to areas of work. ($p < 0.01$).



*Other reasons included flu, fever at the time of vaccination

Figure 1: Reasons for not taking COVID vaccination (n=52)

Table 3: Work area wise distribution of COVID-19 related information among health care workers (n=589)

Variables	Area of work in hospital			p-value
	Clinical/Academic	Administrative	Maintenance/Security	
Previous COVID Infection				
Yes	119 (28.7%)	11 (24.4%)	19 (14.6%)	0.053
No	295 (71.3%)	34 (75.6%)	111 (85.4%)	
Vaccinated for COVID 19				
Yes	382 (92.3%)	33 (73.3%)	122 (93.8%)	0.00056*
No	32 (7.7%)	12 (26.7%)	8 (6.2%)	
Side-Effects				
Yes	296(71.5%)	20 (44.4%)	108 (83.1%)	0.001*
No	86(20.8%)	13 (28.9%)	14 (10.8%)	

*Significant at $p < 0.001$

Table 4: Side effects after vaccination among the study population(n=424)

Variables	Side effects after vaccination		p-value
	Yes	No	
Previous Covid Infection			
Yes	114 (82.6%)	24 (17.3%)	0.22
No	310 (77.7%)	89 (22.3%)	
Age (in years)			
<30	251 (83.1%)	51 (16.9%)	0.007*
>30	173 (73.6%)	62 (26.4%)	

*Significant at $p < 0.05$

Out of 424 vaccine recipients who complained of side effects after vaccination, 251 (42.6%) were <30 years of age and 173 (29.4%) were >30 years. ($p < 0.01$). There was no significant difference in the distribution of side effects between the groups of health workers with and without past history of COVID-19 infection ($p = 0.22$) (Table 4).

DISCUSSION

The present study aimed to determine the vaccination acceptability and explore the side effects of first dose of Covishield vaccine. Out of 589 participants, majority (91.2%) received the first dose of Covishield vaccine and remaining 8.8% did not take the vaccine. Among the non-recipients, majority

(34%) did not take the vaccine due to fear of side effects. This rate of vaccine refusal or hesitancy is lower when compared to that reported among migrant-majority population in Qatar where 20.2% refused the vaccine and 19.8% were unsure of taking the vaccine. The reason for vaccine hesitancy in Qatar was similar to our study i.e. concerns regarding the safety of COVID vaccine and its long-term side effects.⁹ This study was conducted health care workers who possess higher level of knowledge regarding vaccination than the general public, which might be the reason behind lower vaccine hesitancy. In another study conducted among health care workers in England, the vaccine coverage rate of COVID-19 vaccine among was 89%, which is comparable to this study.¹⁰ Vaccine hesitancy has been recognized by the WHO as one of the top ten global treats in 2019.¹¹ Several previous studies have reported high level of vaccine hesitancy to COVID-19 vaccination, ranging from 20% to 40% of the surveyed population.^{9,12-15} Public awareness by sharing credible and reliable information through mass media can be useful to address the public concerns regarding vaccine safety and side effects.

About 78.9% of the vaccine recipients complained of side effects after the first dose of vaccine in this study. A recent study from Nepal reported Adverse Effect Following Immunization (AEFI) in 85.04% participants after first phase of COVID-19 vaccine rollout.⁸ In a survey done among health care workers in Southern India, two thirds (69.7%) had minor AEFI after the first dose of Covishield vaccine.¹⁶ In our study, majority of the side effects were injection site related side effects (25.2%) and very mild side effects (55.9%) which included malaise, myalgia and feverish feeling without increase in temperature. These findings were congruent with the study reported recently from Nepal, where minor AEFI was seen in 84.9% participants.⁸ In the survey reported from South India, two thirds (69.7%) health care workers had minor AEFI after the first dose.¹⁶ These side effects had already been reported in Fact sheet of Covishield vaccine by Serum Institute of India.¹⁷

In our study, there was no statistically significant difference in frequency of side effects between the recipient groups with and

without previous COVID-19 infection. This finding is congruent with the study previously reported from PAHS, Nepal.⁸ In contrast, according to the data from ZOE COVID Symptom Study, people with a previous COVID-19 infection are almost twice likely to experience one or more mild systemic AEFIs than those without past COVID-19 infection after a Pfizer/BioNTech vaccine dose.¹⁸ Krammer et al., in another study, reported that the reactogenicity following the vaccine is significantly higher in individuals who have been previously infected with COVID-19.¹⁹ All the reported side effects were prevalent more among the recipients <30 years of age than those >30 years age (83.1% vs 73.6%) with a statistically significant difference. Similar findings were reported by a study conducted in Czech Republic where side effects after vaccination were more prevalent among health care workers <43 year-old group than >43 year-old group.²⁰

The survey-based technique of the study may lead to self-selection bias, as only the highly motivated participants might have filled in the questionnaire. The sample population was not equally distributed across gender or profession. So, the external validity of the study is limited.

CONCLUSION

Even though majority of health care workers accepted and received the vaccine, there were some of them who did not take the vaccine mostly because of fear of side effects. This necessitates urgent call from stakeholders to address these concerns as the vaccine hesitancy among health workers can give a wrong message to general public. Majority of vaccine recipients had very mild side effects which showed that the COVID-19 vaccine (Covishield) has good safety profile. The side effects were seen more frequently among the younger individuals. We believe that this study will encourage people to come forward and accept the vaccination against COVID-19.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

REFERENCES:

1. Li H, Burm SW. A Comprehensive Review of Coronavirus Disease 2019: Epidemiology, Transmission, Risk Factors, and International Responses. *Yonsei Med J* 2021;62(1):1-11. [DOI]
2. Kadali RAK, Janagama R. Non-life-threatening adverse effects with COVID-19 mRNA-1273 vaccine: A randomized, cross-sectional study on healthcare workers with detailed self-reported symptoms. *J Med Virol*. 2021. [DOI]
3. Worldometer. COVID-19 coronavirus pandemic. 2021 May 8. Available from: https://www.worldometers.info/coronavirus/?utm_campaign=homeAdvegas1
4. Nepal approves emergency use of Covishield Vaccine [press release]. *The Times of India* 2021 January 15. Available from: <https://timesofindia.indiatimes.com/world/rest-of-world/nepal-approves-emergency-use-of-covishield-vaccine/articleshow/80287165.cms>
5. Sah R, Shrestha S, Mehta R, Sah SK, Rabaan AA, Dhama K, et al. AZD1222 (Covishield) vaccination for COVID-19: Experiences, challenges, and solutions in Nepal. *Travel Med Infect Dis*. 2021;40:101989. [DOI]
6. Voysey M, Clemens SAC, Madhi SA, Weckx LY, Folegatti PM, Aley PK, et al. Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK. *Lancet (London, England)*. 2021;397(10269):99-111. [DOI]
7. Rimmel A. COVID vaccines and safety: what the research says. *Nature*. 2021;590(7847):538-40. [DOI]
8. Shrestha S, Devbhandari R, Shrestha A, Aryal S, Rajbhandari P, Shakya B, et al. Adverse effects following the first dose of ChAdOx1 nCoV-19 (COVISHIELD) vaccine in the first phase of vaccine roll out in Nepal. *JPAHS*. 2021;8. [LINK]
9. Alabdulla M, Reagu SM, Al-khal A, Elzain M, Jones RM. COVID-19 vaccine hesitancy and attitudes in Qatar: A national cross-sectional sur-

- vey of a migrant-majority population. *Influenza Other Respir Viruses*. 2021;15(3):361-70. [DOI]
10. Hall VJ, Foulkes S, Saei A, Andrews N, Oguti B, Charlett A, et al. COVID-19 vaccine coverage in health-care workers in England and effectiveness of BNT162b2 mRNA vaccine against infection (SIREN): a prospective, multi-centre, cohort study. *Lancet* (London, England). 2021;397(10286):1725-35. [DOI]
 11. WHO. Ten threats to global health in 2019. Available from: <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019>.
 12. Fisher KA, Bloomstone SJ, Walder J, Crawford S, Fouayzi H, Mazor KM. Attitudes Toward a Potential SARS-CoV-2 Vaccine : A Survey of U.S. Adults. *Ann Intern Med*. 2020;173(12):964-73. [DOI]
 13. Sherman SM, Smith LE, Sim J, Amlôt R, Cutts M, Dasch H, et al. COVID-19 vaccination intention in the UK: results from the COVID-19 vaccination acceptability study (CoVAccS), a nationally representative cross-sectional survey. *Hum Vaccine Immunother*. 2021;17(6):1612-21. [DOI]
 14. Taylor S, Landry CA, Paluszek MM, Groenewoud R, Rachor GS, Asmundson GJG. A Proactive Approach for Managing COVID-19: The Importance of Understanding the Motivational Roots of Vaccination Hesitancy for SARS-CoV2. *Front Psychol*. 2020;11:575950. [DOI]
 15. Peretti-Watel P, Seror V, Cortaredona S, Launay O, Raude J, Verger P, et al. A future vaccination campaign against COVID-19 at risk of vaccine hesitancy and politicisation. *Lancet Infect Dis*. 2020;20(7):769-70. [DOI]
 16. Inbaraj LR, George CE, Franklyn NN. How safe is Covishield (ChAdOx1n-CoV-19) vaccine? Experience from a tertiary care hospital in South India. *medRxiv*. 2021:2021.03.16.21253744. [DOI]
 17. Fact sheet for vaccine recipient approved for restricted use in emergency situation of ChAdOx1 nCoV-19 Corona virus vaccine. In: SII, editor. 2021. Available from: https://www.seruminstitute.com/product_covishield.php
 18. Study CS. Vaccine after effects more common in those who already had COVID [Internet] 2021. Available from: <https://covid.joinzoe.com/post/vaccine-after-effects-more-common-in-those-who-already-had-covid>.
 19. Krammer F, Srivastava K, Simon V. Robust spike antibody responses and increased reactogenicity in seropositive individuals after a single dose of SARS-CoV-2 mRNA vaccine. *medRxiv*. 2021:2021.01.29.21250653. [DOI]
 20. Riad A, Pokorná A, Attia S, Klugarová J, Koščík M. Prevalence of COVID-19 Vaccine Side Effects among Healthcare Workers in the Czech Republic. *J Clin Med*. 2021;10(7). [DOI]