

A Study to Assess the Attitude towards COVID-19 Vaccine among Healthcare Personnel in a Secondary Healthcare Centre, Dimapur, Nagaland

Tungoe Arhoni¹, Imchen Tsusennaro², Walling AW³

¹Associate Professor, Obstetrical & Gynaecological Nursing Department, College of Nursing, Christian Institute of Health Science and Research, Dimapur, Nagaland.

²Senior Resident, Department of Community Medicine, Nagaland Institute of Medical Sciences and Research, Kohima, Nagaland.

³Assistant Professor, Department of Science and Humanities, National Institute of Technology (NIT), Dimapur, Nagaland.

Corresponding Author: Arhoni Tungoe

DOI: <https://doi.org/10.52403/ijhsr.20240330>

ABSTRACT

Objective: To assess the attitude towards COVID-19 vaccination and determine the factors influencing the attitude towards COVID-19 vaccination among the healthcare personnel at a Secondary Healthcare Centre.

Materials and Methods: This cross-sectional study was conducted in a secondary hospital where 120 individuals participated in the study. A semi-structured questionnaire was administered online to gather information on demographic variables, vaccination status, vaccine hesitancy and factors influencing their attitude towards COVID-19 vaccination. The statistical analysis was done by descriptive analysis and bivariate analysis.

Results: Out of the total participants, 112(93.3%) took the COVID-19 vaccine and 8(6.7%) of them did not take it. Among those who took the COVID-19 vaccine, 29 (24.2%) had initial vaccine hesitancy and half of them 15(51%) said that more authentic information helped them overcome their initial vaccine hesitancy. And among those who did not take the COVID-19 vaccine 2 (25%) said they will never take it. Most common reason for taking COVID-19 vaccine was to prevent transmission or spread of COVID-19 105(93.8%).

Conclusion: Overall, the study participants had a positive attitude towards COVID-19 vaccination. But we need to continue providing evidence-based information about COVID-19 vaccine to increase the uptake of vaccination.

Keywords: COVID-19 vaccine, vaccine hesitancy, vaccine acceptance, attitude

INTRODUCTION

One of the most important public health tools for reducing the spread and harm of infectious disease is vaccination. Even though evidence shows that vaccines are safe, scepticism towards vaccination has caused millions of deaths. Vaccine

hesitancy is a major hindrance to the population to get protection from vaccine preventable diseases. Lately, there has been an increase in the prevalence of vaccine preventable diseases because of people's reluctance and hesitance in taking newer vaccines. ¹ The COVID-19 pandemic has

finally yielded to various control measures. Vaccinations have made significant contribution in the control of the spread, severity of illness and mortality due to COVID-19 this otherwise, could have resulted in more deaths and encouraged mutations in the virus.

WHO states that vaccine hesitancy amongst others is one of the worst threats to global health. In order to find out the reasons behind this reluctance, it is rather imperative to have a comprehensive understanding of the reasons behind vaccine hesitancy.²

Jain J. et al. conducted a study to assess the COVID-19 vaccine hesitancy among 1068 undergraduate medical students in India. The results showed that vaccine hesitancy was found among 10.6% with regard to vaccine safety, efficacy, hurried testing of vaccines prior to launch and lack of trust in government agencies etc. The study also showed that targeted awareness campaigns, regulatory oversight of vaccine trials and public release of safety and efficacy and trust building activities can further lead to the reduction of COVID-19 vaccine hesitancy among the health care workers.³

In India, on 16th January 2021, the COVID-19 vaccine was launched as the first phase to be given priority to all the healthcare workers including all the medical professional students.⁴ As of 28th September 2022, in India 218 crore people have been vaccinated out of which 98.4 crore were fully vaccinated.⁴

In Nagaland, the COVID-19 vaccination coverage was 65% by 30th of March 2022. Among the front line workers 99.7% received the first dose and 79.9% second dose, 65.4% received the first dose in the age group of 18-44 years and 48.7% were vaccinated with the second dose while in the age group of 45 years and above, 48.7% received the first dose and 41.9% the second dose. A total of 25,012 people received the precautionary dose. Altogether 14,59,957 COVID-19 vaccine doses were administered in the state so far.⁵

We can observe that the majority of the population in Nagaland is yet to take the

vaccine. The reasons behind such low vaccination turnover can be among many; genuine vaccine shortage, vaccine hesitancy due to myths and misconceptions, social media influence, fake news and lack of awareness and knowledge on the safety and efficacy of the COVID-19 vaccine.

With COVID-19 pandemic being a new infection on the surge and the vaccines which have come up to fight against this disease, it has given us a good opportunity to investigate the reasons of vaccine hesitancy during such periods. This study is designed to assess the factors influencing the attitude towards COVID-19 vaccine and to formulate strategies to reduce vaccine hesitancy and thereby increase the uptake of vaccines.

MATERIALS & METHODS

A cross-sectional study was conducted in a secondary care hospital in Dimapur, Nagaland. The participants were the healthcare workers of the hospital. The sampling technique used was convenient sampling. Sample size was calculated using the Cochran formula, by taking the acceptance of COVID-19 vaccine in the study sample as 29.4% from a previous study by Sallam M. et al. which yielded a sample size of 318.⁶ Study participants gave their informed consent.

Inclusion criteria were the healthcare workers who were willing to participate in the study and exclusion criteria were those who were out of station and were sick during the study period. The study was conducted when the COVID-19 vaccination campaigns were still going on. The study was conducted from October 2021 to December 2021 for the study was 3 months.

The data was collected online via WhatsApp by administering a data collection tool (KoBo Toolbox). When the participants received the link they had to click the link where they got auto directed to the informed consent section followed by the questionnaires. Pretested and validated questionnaire was used for data collection. It was designed to collect information

regarding demographic details, COVID-19 vaccination status, vaccine hesitancy and acceptance with its reasons.

The data was stored in Microsoft excel and statistical analysis was done using SPSS software v21.0. Statistical analysis was done by descriptive statistics and bivariate logistic regression. Ethical clearance was granted by the Institutional Review Board and study was conducted according to the medical ethical guidelines.

RESULT

A total of 120 individuals participated in the study. Majority of the participants were in the age group of 18 to 35 years 101(84.2%) followed by those in 36 to 55 years 17(14.2%) and above 60 years 2(1.7%). Maximum of the participants were female 102 (85%). Educational qualification of almost half 48(40%) of the participants were up to higher secondary level followed by graduate 31(25.8%) and those who completed high school 18(15%) and postgraduate 18(15%). [Table 1]

Table 1: Socio-Demographic characteristics of study participants

Characteristic	Category	Frequency	Percentage%
Age	18 to 35 years	101	84.2
	36 to 55 years	17	14.2
	Above 56 years	2	1.7
Gender	Female	102	85
	Male	18	15
Education	Primary (Upto CI-V)	4	3.3
	High school (Upto CI-X)	18	15
	Higher Secondary (Upto CI-XII)	48	40
	Graduate	31	25.8
	Postgraduate	18	15
	Postgraduate and above	1	0.8

Of the total participants, 112(93.3%) took the COVID-19 vaccine and 8(6.7%) of them did not take it. Out of those who took the COVID-19 vaccine 29(24.2%) had initial vaccine hesitancy whereas 83(69.2%) participants did not have any initial vaccine hesitancy. Out of the 8 participants who did not take COVID-19 vaccine, 6(75%) said

that they will take the COVID-19 vaccine later but 2 (25%) said they will never take the COVID-19 vaccine. More than half of the participants 96(80%) said that they persuaded people to take the COVID-19 vaccine and only 4(3.3%) persuaded people not to take the COVID-19 vaccine. [Table 2]

Table 2: Distribution of study participants according to attitude towards COVID 19-vaccine

Questions	Yes n (%)	No n (%)
Did you take the COVID-19 vaccine? (N=120)	112 (93.3)	8 (6.7)
Did you have initial vaccine hesitancy to take the COVID-19 vaccine? (N=112)	29 (24.2)	83 (69.2)
Will you ever take the COVID-19 vaccine? (N=8)	6 (75)	2 (25)
Did you persuade anybody to take the vaccine? (N=120)	96 (80)	24 (20)
Did you persuade anybody not to take the vaccine? (N=120)	4 (3.3)	116 (96.7)

In the study the most common reason for taking COVID-19 vaccine was to prevent transmission or spread of COVID-19 105(93.8%). 34(30.4%) of them said because of directives given by the institute or Government, 11(9.8%) of the participants were encouraged by family and friends to take the COVID-19 vaccine and 2(1.8%) were encouraged by their religious leaders to take the COVID-19 vaccine. Among the participants, 8 individuals did not take the

COVID-19 vaccine, 5(62.5%) of them did not take the COVID-19 vaccine due to health-related issues/problem. The other reasons were due to fear of injection 1(12.5%), fear of AEFI 1(12.5%) and 1(12.5%) participant said that it is one's own personal choice and not a compulsion to take the COVID-19 vaccine. Of those who took the COVID-19 vaccine, 29 participants had initial vaccine hesitancy. Half of them 15(51%) said that more

authentic information helped them overcome their initial vaccine hesitancy, 6(20.6%) participants said that Government requirement compelled them to take the COVID-19 vaccine and 7(24%) participants said that since many people started taking the vaccine so they became confident to

take the COVID-19 vaccine. Some of the participants gave other reasons like ‘Can’t go anywhere if I don’t take the COVID-19 vaccine, awareness on COVID-19 vaccine, doctors and nurses were taking COVID-19 vaccine confidently. [Table 3]

Table 3: Reasons for COVID-19 vaccine acceptance and vaccine hesitancy

Reasons for taking the COVID-19 vaccine (N=112)		Frequency(n)	Percentage (%)
To prevent transmission or spread of COVID-19		105	93.8
Directives given by the institute or Government		34	30.4
Encouraged by family and friends to take the COVID-19 vaccine		11	9.8
Encouraged by our religious leaders		2	1.8
Other reasons		1	0.9
Reasons for NOT taking the COVID-19 vaccine (N=8)		Frequency	Percentage
Fear of injection		1	12.5
Due to health issues/problem		5	62.5
Fear of AEFI		1	12.5
It is a choice and not a compulsion to take the vaccine		1	12.5
Reason(s) that helped overcome the initial vaccine hesitancy (n=29)		Frequency	Percentage
More authentic information convinced me		15	51
Government requirement compelled me		6	20.6
Most people seems to be taking the vaccine so I became confident		7	24
Other reasons		8	27.5

In the study there was no statistically significant association between the demographic variables like age, gender and

education with acceptance of COVID-19 vaccination and initial vaccine hesitancy. [Table 4]

Table 4: Association of demographic variables with acceptance of COVID-19 vaccine and initial vaccine hesitancy.

Demographic Item	Did you take the COVID-19 vaccine? N=120		*p value	Did you have initial vaccine hesitancy? N=112		*p value
	Yes	No		Yes	No	
Gender						
Female	95 (84.8%)	7 (87.5%)	1.000	26 (89.7%)	69 (83.1%)	.552
Male	17 (15.2%)	1 (12.5%)		3 (10.3%)	14 (16.9%)	
Age						
35 years & below	95 (84.8)	6 (75.0%)	0.611	23 (79.3%)	72 (86.7%)	.372
Above 35 years	17 (15.2%)	2 (25.0%)		6 (20.7%)	11 (13.3%)	
Education						
Below graduate	63 (56.3%)	7 (87.5%)	0.137	16 (55.2%)	47 (56.6%)	1.000
Graduate & above	49 (43.8%)	1 (12.5%)		13 (44.8%)	83 (43.4%)	

In the study there was no statistically significant association between the demographic variables like age, gender and

education with persuading and not persuading others to take COVID-19 vaccination. [Table 5]

Table No. 5: Association of demographic variables with persuading people to take the COVID-19 vaccine as well as not to take the COVID-19 vaccine.

Demographic Item	Did you persuade anybody to take COVID-19 vaccine? N=120		*p value	Did you persuade anybody not to take COVID-19 vaccine? N=120		*p value
	Yes	No		Yes	No	
Gender						
Female	83 (81.4%)	19 (18.6%)	.354	4 (3.9%)	98 (96.1%)	1.000
Male	13 (72.2%)	5 (27.8%)		0 (0%)	18 (100%)	
Age						
35 years & below	81 (80.2%)	20 (19.8%)	1.000	3 (3%)	98 (97%)	.488
Above 35 years	15 (78.9%)	4 (21.1%)		1 (5.3%)	18 (94.7%)	
Education						
Below graduate	54 (77.1%)	16 (22.9%)	.488	3 (4.3%)	67 (95%)	.640
Graduate & above	42 (84%)	8 (16%)		1 (2%)	49 (98%)	

DISCUSSION

In our sample of 120 healthcare personnel majority of the participants were in the age group of 18 to 35 years 101(84.2%) and maximum female 102 (85%). The educational qualification of almost half 48(40%) of the participants were up to higher secondary level. In the study 112(93.3%) of the participants had taken the vaccine, which shows that more than 90% of the participants have a positive attitude towards COVID-19 vaccine, but vaccine hesitancy does still persist among the health care personnel. The study was found to be consistent with a study done by Kenneth G. et al. in Tamil Nadu, India where a community-based survey was done among 564 participants to assess the attitude towards COVID-19 vaccines and vaccine hesitancy, where more than 50% of the respondents had a positive attitude towards the COVID-19 vaccines.⁷ The study also showed similar results with Leelavathy M. et al. where a positive attitude towards COVID-19 vaccination among the public in Kerala was found among 1345 participants, and the willingness for vaccine uptake was shown to be high.⁸ Alqudeimant Y et al. showed that 1257(53.1%) participants were willing to take the COVID-19 vaccination.⁹ In our current study 29(24.2%) had initial vaccine hesitancy and 83(69.2%) did not have any initial vaccine hesitancy. However in a study conducted by Schwarzingler M. et al. among working-age population in France showed that 55(4.9%) participants would certainly get vaccinated and 420 (37.1%) were hesitant to get the vaccination.¹⁰ A study conducted by Pataka A. et al. before the COVID-19 vaccination started showed that of the 656 healthcare personnel surveyed, 71.1% planned to accept the immunization, 5.9% declined and 23% were still unsure.¹¹

In the study the most common reason for taking COVID-19 vaccine was to prevent transmission or spread of COVID-19 105(93.8%) followed by because of directives given by the institute or

Government 34(30.4%), encouraged by family and friends to take the COVID-19 vaccine 11(9.8% and encouragement given by their religious leaders to take the COVID-19 vaccine 2(1.8%). In a global study by Jeffrey V. L et al. in 19 countries, 13,426 people participated in the study to assess

potential acceptance of a COVID19 vaccine. Of those 71.5% said they would get the vaccine if it were shown to be safe and effective and 48.1% said they would get it if their employer suggested it.¹²

In this study the reasons for not taking the vaccine were, 5(62.5%) of them did not take the COVID-19 vaccine due to health related issues/problem. The other reasons were due to fear of injection 1(12.5%), fear of AEFI 1(12.5%) and 1(12.5%) participant said that it is one's own personal choice and not a compulsion to take the COVID-19 vaccine. In a study conducted by Adane M. et al. showed that 221(56.4%) had fear towards COVID-19 vaccine.¹³ Biswas N. et al. conducted a study on the nature and extent of COVID-19 vaccination hesitancy in healthcare workers. The top reasons for COVID-19 vaccination hesitancy among healthcare workers in majority (>75%) of the studies were concerns about vaccine safety, efficacy and potential side effects. Other reasons for COVID-19 vaccination hesitancy were: insufficient knowledge about the vaccines, belief that COVID-19 does not exist or is not a serious disease, speedy development of vaccines, politics surrounding vaccine development process, misinformation from social media, previous COVID-19 infection or health conditions, and mistrust in authorities, health experts and pharmaceutical companies.¹⁴

In our study, 29 participants had initial vaccine hesitancy and some of the reasons that helped overcome the initial vaccine hesitancy were, "More authentic information convinced me" 15(51%), "Government requirement compelled me" 6(20.6%), "Most people seems to be taking the vaccine so I became confident" 7(24%),

and some of the participants gave other reasons like 'Can't go anywhere if I don't take the COVID-19 vaccine, more awareness on COVID-19 vaccine, doctors and nurses were taking COVID-19 vaccine confidently 8(27.5%). Similarly in a global study by Jeffrey V. L. et al. in 19 countries, 13,426 people participated in the study to assess potential acceptance of a COVID-19 vaccine. Of those 71.5% said they would get the vaccine if it were shown to be safe and effective and 48.1% said they would get it if their employer suggested it. The acceptance rates were higher in China 90% as compared to Russia 55%. Participants who had higher levels of trust in information from government sources had the potential to accept the vaccine as well as take advice from their employers too.¹² The global intention to take COVID-19 immunisations was investigated in an exploratory study conducted by Alexandre F, Heidi J.L Generally speaking, higher levels of education, being male, over 65, and thinking that the government is managing the pandemic effectively are linked to higher levels of declared acceptance.¹⁵

In our current study, initial vaccine hesitancy was higher among the female healthcare personnel 26(89.7%) than males 3(10.3%). When it comes to age group, 35 years and below had more vaccine hesitancy 23 (79.3%) than those 35 years and above 6(20.7%). In terms of educational qualification, undergraduates showed more vaccine hesitancy 16(55.2%) than those graduates and above 13 (44.8%). Similar findings were found in a study conducted by Robertson E et al. a longitudinal study on predictors of COVID-19 vaccine hesitancy in UK households, where vaccine hesitancy was higher in women (21.0% Vs 14.7%), younger age groups (26.5% in 16 - 24 year old Vs 4.5% in 75 years and above) and those with lower education levels (18.6% no qualifications Vs 13.2% degree qualified).¹⁶ The study did not show any statistically significant association between the demographic variables like age, gender and

educational qualification with intake of the COVID-19 vaccine and initial vaccine hesitancy and persuading people to take the COVID-19 vaccine as well as not to take the COVID-19 vaccine. Unlike the current study, this was conducted by Lazarus JV et al. which examined the relationships between vaccination acceptance and age, gender, and educational attainment using a random sample of 13,426 participants chosen from 19 high-COVID-19 burden nations. The findings indicated that compared to men, women in France, Germany, Russia, and Sweden were far more likely to accept a vaccination. In comparison to younger respondents, older (≥ 50) people in Canada, Poland, France, Germany, Sweden, and the UK showed a substantially stronger preference for vaccination. In Ecuador, France, Germany, India, and the US, highly educated people said they would accept a vaccination; however, in Canada, Spain, and the UK, greater education levels were linked to lower vaccination acceptability.¹⁷

CONCLUSION

From this study, we can conclude that the attitude towards the COVID-19 vaccine was positive among the health care personnel. But a lot of challenges still lie in the successful implementation of the COVID-19 vaccine, so continuous education about the myths, misunderstandings and misinformation about the vaccines needs to be addressed and corrected, even among the healthcare personnel. Collaborative efforts from the government, health policymakers and media sources including social media have to be emphasized. Trust should be generated and built among the public through the confidence shown by health care personnel by advocating the safety and efficacy of the available COVID-19 vaccines. A lot of positive testimonies from the vaccine takers would eliminate the fear and doubt of the people, which could change their attitude towards the COVID-19 vaccination.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Fridman A, Gershon R, Gneezy A. COVID-19 and vaccine hesitancy: A longitudinal study. PLoS ONE. 2021 Nov; 16(4): 1-12. <https://doi.org/10.1371/journal.pone.0250123>.
2. <https://theconversation.com/vaccine-hesitancy-is-one-of-the-greatest-threats-to-global-health-and-the-pandemic-has-made-it-worse-208227>.
3. Jain J, Saurabh S, Kumar P, Kumar VM, Goel AD, Kumar GM, Bhardwaj P, Raghav PR. COVID-19 vaccine hesitancy among undergraduate medical students: results from a nationwide survey in India. BMJ. 2021; doi: <https://doi.org/10.1101/2021.03.12.21253444>.
4. Department of health and family welfare integrated disease surveillance programme Kohima, Nagaland. Weekly bulletin COVID-19. 2021; 54:1-2.
5. <https://nenow.in/north-east-news>.
6. Sallam M, Dababseh D, Eid H, Al-Mahzoum K, Al-Haidar A, Taim D, Yaseen A, Ababneh NA, Bakri FG, Mahafzah A. High Rates of COVID-19 Vaccine Hesitancy and Its Association with Conspiracy Beliefs: A Study in Jordan and Kuwait among Other Arab Countries. Vaccines (Basel). 2021 Jan 12;9(1):42. doi: [10.3390/vaccines9010042](https://doi.org/10.3390/vaccines9010042). PMID: 33445581; PMCID: PMC7826844.
7. Kenneth G, Magesh SS, Saravanan S, Gopichandran V. Attitude towards COVID 19 vaccines and vaccine hesitancy in urban and rural communities in Tamil Nadu, India – a community based survey. BMC Health Services. 2021; Research volume 21, Article number: 994.
8. Leelavathy M, Messaline S, Ramachandran D, Sukumaran A, Jose R, Noufel AN. Attitude towards COVID-19 vaccination among the public in Kerala. Journal of Family Medicine and Primary Care: November 2021; 10(11): 4147-4152. doi: [10.4103/jfmpc.jfmpc_583_21](https://doi.org/10.4103/jfmpc.jfmpc_583_21).
9. Alqudeimat Y, Alenezi D, AlHajri B, Alfouzan H, Almokhaizeem Z, Altamimi S, Almansouri W, Alzalalah S, Ziyab AH.. Acceptance of a COVID-19 Vaccine and Its Related Determinants among the General Adult Population in Kuwait. Med Princ Pract. 2021; 30:262–271, DOI: [10.1159/000514636](https://doi.org/10.1159/000514636).
10. Schwarzingler M, Watson V, Arwidson P, Alla F, Luchini S. COVID-19 vaccine hesitancy in a representative working-age population in France: a survey experiment based on vaccine characteristics. Lancet Public Health. February 2021; 6: e210–21. [https://doi.org/10.1016/S2468-2667\(21\)00012-8](https://doi.org/10.1016/S2468-2667(21)00012-8).
11. Pataka A, Kotoulas S, Stefanidou E, Grigoriou I, Tzinas A, Tsiouprou I, Zarogoulidis P, Courcoutsakis N, Argyropoulou P. Acceptability of Healthcare Professionals to Get Vaccinated against COVID-19 Two Weeks before Initiation of National Vaccination. Medicina 2021; 57, 611. <https://doi.org/10.3390/medicina57060611>.
12. Lazarus JV, Ratzan SC, Palayew A, Gostin LO, Larson HJ, Rabin K, Kimball S, El-Mohandes A. A global survey of potential acceptance of a COVID-19 vaccine. Nature Medicine. February 2021; VOL 27: 225–228. www.nature.com/naturemedicine. <https://doi.org/10.1038/s41591-020-1124-9>.
13. Adane M, Ademas A, Kloos H. Knowledge, Attitude and Perceptions of COVID-19 vaccine and refusal to receive COVID-19 vaccine among healthcare Workers in Northeast Ethiopia. BMC Public Health. 2022; 22:128. DOI.org/10.1186/s12889-021-12362-8.
14. Biswas N, Mustapha T, Khubchandani J, Price JH. The Nature and Extent of COVID 19 Vaccination Hesitancy in Healthcare Workers. Journal of Community Health. 20 April 2021: <https://doi.org/10.1007/s10900-021-00984-3>.
15. Alexandre F, Heidi J.L. Exploratory study of the global intent to accept COVID-19 vaccinations Communications Medicine. 09 September 2021;1(30).
16. Robertson E, Reeve KS, Niedzwiedz CL, Moore J, Blake M, Green M, Katikireddi SV, Benzeval MJ. Predictors of COVID-19 vaccine hesitancy in the UK household longitudinal study. Brain Behav Immun.

2021 May; 94: 41–50 doi: 10.1080/10810730.2020.1868630. PMID: 33719881.
10.1016/j.bbi.2021.03.008:
10.1016/j.bbi.2021.03.008.

17. Lazarus JV, Wyka K, Rauh L, Rabin K, Ratzan S, Gostin LO, Larson HJ, El-Mohandes A. Hesitant or Not? The Association of Age, Gender, and Education with Potential Acceptance of a COVID-19 Vaccine: A Country-level Analysis. *J Health Commun.* 2020 Oct 2;25(10):799-807. doi:

How to cite this article: Tungoe Arhoni, Imchen Tsusennaro, Walling AW. A study to assess the attitude towards COVID-19 vaccine among healthcare personnel in a Secondary Healthcare Centre, Dimapur, Nagaland. *Int J Health Sci Res.* 2024; 14(3):204-211. DOI: <https://doi.org/10.52403/ijhsr.20240330>
