

Available online at [www.sciencerepository.org](http://www.sciencerepository.org)

Science Repository



## Research Article

## COVID-19 Vaccine Acceptance Among Cancer Patients at Sindh Institute of Urology and Transplantation

Anita Vallacha<sup>1\*</sup>, Afshan Asghar Rasheed<sup>2</sup>, Narjis Muzaffar<sup>3</sup>, Najeeb Niamatullah<sup>4</sup>, Babar Malik<sup>5</sup>, Chandu Mal<sup>5</sup> and Lubna Gul<sup>6</sup>

<sup>1</sup>Primary Investigator, Senior Lecturer, Department of Medical Oncology, Hanifa Suleman Dawood Cancer Center, Sindh Institute of Urology and Transplantation, Pakistan

<sup>2</sup>Assistant Professor, Department of Medical Oncology, Hanifa Suleman Dawood Cancer Center, Sindh Institute of Urology and Transplantation, Pakistan

<sup>3</sup>Professor and Head of Department, Department of Medical Oncology, Hanifa Suleman Dawood Cancer Center, Sindh Institute of Urology and Transplantation, Pakistan

<sup>4</sup>Consultant Medical Oncologist, Department of Medical Oncology, Hanifa Suleman Dawood Cancer Center, Sindh Institute of Urology and Transplantation, Pakistan

<sup>5</sup>Senior Lecturer, Department of Medical Oncology, Hanifa Suleman Dawood Cancer Center, Sindh Institute of Urology and Transplantation, Pakistan

<sup>6</sup>Medical Officer, Department of Medical Oncology, Hanifa Suleman Dawood Cancer Center, Sindh Institute of Urology and Transplantation, Pakistan

## ARTICLE INFO

## Article history:

Received: 17 May, 2022

Accepted: 30 May, 2022

Published: 22 June, 2022

## Keywords:

COVID-19

vaccine

cancer

## ABSTRACT

**Background:** Coronavirus disease (COVID-19) was declared as pandemic by World Health Organization (WHO) on 30th January 2020. Cancer patients are a vulnerable population with increased risk for mortality associated with COVID-19 infection. In this study, we report the impact of education for acceptance of COVID-19 vaccination in our cancer patients.

**Methods:** This was a cross-sectional study between 1st August 2021 and 31st October 2021. All patients with diagnosis of cancer who presented to the oncology clinic were asked whether they received COVID-19 vaccine or planning to get vaccinated. Patients, who had refused the vaccine, were educated to get vaccinated. Post counseling, they were again asked if they would agree to get vaccinated.

**Results:** Out of 512 cancer patients, 274 (53.5%) were male. Of total, 456 (89.1%) were diagnosed cases of solid malignancy. Patients who were on active oncological treatment were 406 (79.3%). Of total 512, 396 (77.3%) patients agreed for the COVID-19 vaccine while 116 (22.7%) had refused to get vaccinated. Of those 116, 75 (64.7%) patients accepted to get vaccinated post counseling.

**Conclusion:** COVID-19 vaccine acceptance is higher among cancer patients at our institute compared to reported data. Oncologists should play a key role in encouraging their patients to get vaccine in order to reduce COVID-19 related mortality.

© 2022 Anita Vallacha. Hosting by Science Repository.

## Introduction

Coronavirus disease (COVID-19) was declared a pandemic by World Health Organization (WHO) on 30th January 2020 [1]. By 27th May 2021, 911,302 cases were reported as COVID-19 positive in Pakistan with 20,540 deaths [2]. Sinopharm, Cansino, Sputnik V, Oxford

AstraZeneca were approved by Drug Regulatory Authority of Pakistan (DRAP) in February 2021 [3]. To achieve herd immunity, 80% population has to be vaccinated. There is limited information regarding COVID-19 vaccine efficacy in cancer patients. Many trials of vaccine development did not include cancer patients. In BNT162b2 mRNA Pfizer COVID-19 vaccine trial, only 3.7% of 43,540 enrolled persons were cancer patients [4]. Cancer patients are a vulnerable population

\*Correspondence to: Dr. Anita Vallacha, Primary Investigator, Senior Lecturer, Department of Medical Oncology, Hanifa Suleman Dawood Cancer Center, Sindh Institute of Urology and Transplantation, Pakistan; Tel: +923368025062 ; E-mail: [Anita\\_vallacha@hotmail.com](mailto:Anita_vallacha@hotmail.com)

with increased risk for mortality associated with any infection. This population is at risk of high mortality with new COVID-19 infection. None of approved vaccines are live attenuated virus, therefore can be given to cancer patients [5]. Many studies since the pandemic have shown an increased risk of COVID-19 infection and its related complications in patients with active cancer or history of cancer.

In a study from USA, mortality with COVID-19 infection was higher (14.9%) in patients with cancer as compared to patients without cancer (4.9%) [6]. Cancer patients should get vaccinated along with maintaining other preventive measures like wearing face masks, hand hygiene and social distancing. The professional oncological societies like American Society of Clinical Oncology (ASCO), American Association for Cancer Research (AACR) and European Society of Medical Oncology (ESMO) have strongly recommended to vaccinate cancer patients on priority basis to avoid COVID-19 infection related morbidity and mortality [7-9]. In Pakistan, vaccine related rumors and fears are barriers that prevent people from getting vaccinated against preventable diseases. Vaccine hesitancy is the primary cause of failure of the Polio eradication programme. There is a negative perception and rumors about COVID-19 vaccine among general public of Pakistan [10]. Center for Economic Research in Pakistan (CERP) has done a survey in the general public in Punjab during December 2020/January 2021, which has shown that 30% respondents refused to get vaccinated [11]. COVID-19 vaccine acceptance has been studied among health care professionals in Pakistan [12]. Studies have been published from United States of America (USA) and France regarding vaccine acceptance among cancer patients [13, 14]. There is no published data on vaccine acceptance among cancer patients in Pakistan. In this study, we report the outcome of impact of counseling for acceptance of COVID-19 vaccination in our cancer patients.

## Methodology

This was a cross-sectional study done at the Hanifa Suleman Dawood oncology center, Sindh Institute of Urology and Transplantation from 1st August 2021 to 31st October 2021. All patients enrolled in the study were diagnosed of cancer. Based on the previous estimate, 53.7% patients intended to get vaccinated, a total of 512 cancer patients were included in this study, with margin of error 4% and 95% confidence interval [14]. Patient on active treatment (surgery/chemotherapy/radiotherapy/concurrent chemo

radiotherapy/hormonal therapy/targeted therapy) and surveillance were included. All patients were asked whether they had received COVID-19 vaccine or planning to get vaccine. Patients, who had refused the vaccine, were educated to get the vaccine. Post counseling, patients were asked again if they would agree to get vaccinated. Informed consent was taken before filling structured proforma. Ethical review committee approval was obtained before the initiation of the study.

Statistical package for social sciences (SPSS) version 22.0 was used to perform data analysis. Demographics and clinical characteristics were reported as frequencies and percentages for qualitative variables. For comparison of clinical characteristics with post counseling acceptance, the chi-square test was used. P-value of  $\leq 0.05$  was considered as statistically significant.

## Results

Out of 512 cancer patients, there was no significant difference in gender for vaccine acceptance, 274 (53.5%) patients were male, majority of patients were in 41 to 60 years age group 249 (48.6%). Type of malignancy is reported in (Table 1). Patients on active treatment were 406 (79.3%). Of these, 218 (42.6%) were on chemotherapy, 60 (11.7%) were on hormonal therapy. About 51 (10%) were on targeted therapy, 66 (12.9%) patients underwent surgery during this time. Patients on concurrent chemo radiation (CCRT) were 10 (2%), while 8 (1.6%) were on radiotherapy. About three fourth of patients 386 (75.4%) were on curative treatment. A small number of patients 35 (6.8%) had history of COVID-19 infection. Only 58 (11.3%) patients had history of COVID-19 infection in family/friends and history of death due to COVID-19 infection in 16 (3.1%). Of total patients, 396 (77.3%) patients agreed to get the COVID-19 vaccine and 116 (22.7%) patients refused to get vaccinated. Patients who refused to get vaccinated were asked the reasons for refusal (Table 2). These patients were further educated regarding how the vaccine works and that the risk of COVID-19 related mortality is higher in immune suppressed patients. After counseling, they were again asked whether they would now want to get vaccinated. Of these 116 patients, 75 (64.7%) agreed to get vaccinated whereas 41 (35.4%) patients still refused due to some concerns. The two main statistically significant reasons for refusing vaccination in spite of counseling were history of COVID-19 infection in self and concern about vaccine interference with cancer treatment (Table 3).

**Table 1:** Demographics and Clinical Characteristics.

Parameters	FrequencyN=512	Percentages(%)
<b>AGE</b>		
18 to 40	143	27.9
41 to 60	249	48.6
>60	120	23.5
<b>GENDER</b>		
Male	274	53.5
Female	238	46.5
<b>Cancer Types</b>		
Breast	148	28.9
<b>GENITO-URINARY</b>		
Prostate (CAP)	52	10.2

Kidney (RCC)	80	15.6
Bladder (NHC)	52	10.1
Testis (T)	34	6.6
ADRENAL (AD)	9	1.8
<b>GASTROINTESTINAL</b>		
Esophagus (ESO)	10	2.0
Gastric (GAS)	3	0.6
Pancreatic-Biliary (PBC)	8	1.6
Colorectal (CRC)	45	8.8
<b>HAEMATOLOGY</b>		
Hodgkin's lymphoma (HL)	15	2.9
Non-Hodgkin's lymphoma (NHL)	18	3.5
Multiple Myeloma (MM)	22	4.3
<b>MISCELLANEOUS (ONCO)</b>	16	3.1
<b>CANCER TYPES</b>		
Solid	456	89.1
<b>Hematological</b>	56	10.9
<b>CANCER STATUS</b>		
On Treatment	406	79.3
On Surveillance	106	20.7
<b>TREATMENT GOAL</b>		
Curative	386	75.4
Palliative	126	24.6
<b>TREATMENT TYPE</b>		
Surgery	66	12.9
Chemotherapy	218	42.6
Radiotherapy	8	1.6
CCRT	10	2.0
Hormonal Therapy	60	11.7
Targeted therapy	51	10.0
<b>DID YOU GET COVID-19 INFECTION?</b>		
YES	36	7.0
NO	476	93.0
<b>DID YOU GET COVID-19 INFECTION? IF YES? [15]</b>		
Mild	23	4.5
Moderate	13	2.5
Not applicable (NO infection)	476	93.0
<b>HAS SOMEONE IN YOUR FAMILY/FRIENDS CIRCLE SUFFERED FROM COVID-19 INFECTION?</b>		
Yes	58	11.3
No	453	88.5
I don't know	1	0.2
<b>HAS SOMEONE IN YOUR FAMILY/FRIENDS CIRCLE DIED OF THIS INFECTION?</b>		
Yes	16	3.1
No	495	96.7
I don't know	1	0.2
<b>WILL YOU AGREE TO GET COVID-19 VACCINE?</b>		
YES	396	77.3
NO	116	22.7

**Table 2:** Reasons of refusal.

Parameters	Frequency	Percentages
COVID-19 does not exist	2	0.4
Scared of side effects	89	17.4
Don't know if vaccine will work	6	1.2
Don't trust due to emergency approval of vaccine	3	0.6
Don't trust government approved vaccine	3	0.6
Fear of COVID-19 infection with COVID-19 vaccine	6	1.2
Elders in my family are not in favour of vaccination	8	1.6
Someone in my family/friends had a bad reaction after vaccination	10	2.0
I don't know that I need COVID-19 vaccine	7	1.4
Concern about vaccine interference with fertility/pregnancy	3	0.6
Concern about vaccine interference with cancer treatment	34	6.6
Preference of preventive measures (mask/social distancing	6	1.2
<b>Post Counseling Acceptance</b>		
Yes	75	14.6
No	41	8.2

**Table 3:** Comparison of Post Counseling COVID-19 vaccine acceptance of patients.

Parameters	Yes n =75(%)	NO n=41 (%)	p-value
<b>Age</b>			
18-40	30 (40.0)	14 (34.1)	0.82
41-60	33 (44.0)	20 (48.8)	
>60	12 (16.0)	7 (17.1)	
<b>Gender</b>			
Male	35 (46.7)	16 (39.0)	0.42
Female	40 (53.3)	25 (61.0)	
<b>Cancer</b>			
Breast	27 (36.0)	14 (34.1)	0.79
Genito-urinary	25 (33.3)	10 (24.4)	
Gastro-intestinal	10 (13.3)	8 (19.5)	
Hematological	10 (13.3)	7 (17.1)	
Others	3 (4.0)	2 (4.9)	
<b>Cancer Type</b>			
Solid	65 (86.7)	33 (80.5)	0.38
Hematological	10 (13.3)	8 (19.5)	
<b>Cancer Status</b>			
On Treatment	62 (82.7)	35 (85.4)	0.70
On Surveillance	13 (17.3)	6 (14.6)	
<b>Treatment Goal</b>			
Curative	57 (76.0)	32 (78.0)	0.80
Palliative	18 (24.0)	9 (22.0)	
<b>Treatment Type</b>			
Surgery	2 (2.7)	2 (4.9)	0.53
Chemotherapy	42 (56.0)	23 (56.1)	0.99
Radiotherapy	2 (2.7)	0 (0)	0.29
CCRT	1 (1.3)	3 (7.3)	0.09
Hormonal Therapy	10 (13.3)	6 (14.6)	0.84
Targeted therapy	7 (9.3)	1 (2.4)	0.16
<b>Did you get COVID-19 infection?</b>	2 (2.7)	5 (12.2)	0.03
<b>If YES, then?</b>			
Mild	2 (2.7)	3 (7.3)	0.07
Moderate	0 (0)	2 (4.9)	
<b>Has someone in your family/friends circle suffered from COVID-19 infection</b>	5 (6.7)	5 (12.2)	0.31
<b>Has someone in your family/friends circle dies of this infection</b>	0 (0)	1 (2.4)	0.17

COVID-19 does not exist	0(0)	2 (4.9)	0.05
Scared of side effects	60 (80.0)	29 (70.7)	0.25
Don't know if vaccine will work	5 (6.7)	1 (2.4)	0.32
Don't trust due to emergency approval of vaccine	2 (2.7)	1 (2.4)	0.94
Don't trust government approved vaccine	2 (2.7)	1 (2.4)	0.94
Fear of COVID-19 infection with COVID-19 vaccine	2 (2.7)	4 (9.8)	0.09
Elders in my family are not in favour of vaccination	5 (6.7)	3 (7.3)	0.89
Someone in my family/friends had a bad reaction after vaccination	6 (8.0)	4 (9.8)	0.74
I don't know that I need COVID-19 vaccine	6 (8.0)	1 (2.4)	0.22
Concern about vaccine interference with fertility/pregnancy	2 (2.7)	1 (2.4)	0.94
Concern about vaccine interference with cancer treatment	29 (38.7)	5 (12.2)	0.03
Preference of preventive measures (mask/social distancing) etc.	3 (4.0)	3 (7.3)	0.44

## Discussion

In late February 2020, the first COVID-19 positive case was reported in Pakistan [16]. To end this pandemic, vaccination and preventive measures are the two most important strategies. It is estimated that between 170,000 and 200,000 new cancer cases are diagnosed each year in Pakistan with a population of around 220 million [17]. Cancer patients are known to be immune compromised, either due to cancer or due to its treatment and its related complications. Before this pandemic, cancer patients were advised for infection control measures like hand hygiene, wearing face masks etc. during chemotherapy. Since this pandemic we are advising our patients to maintain these infection control measures and to get vaccinated for COVID-19. The oncologists should evaluate the knowledge as well as efficacy and safety concerns of their patients regarding this vaccine and resolve their concerns.

In a study from Pakistan, 70% of general public agreed to get vaccinated whereas 77.3% of our cancer patients agreed to get vaccinated [18]. Of those who had refused initially, when educated, 64.7% of them agreed to get vaccinated. In a French study, 53.7% cancer patients had intent to be vaccinated once vaccine was available [14]. In a study from China, 75.9% cancer patients had vaccine acceptance [19]. In our cancer patients, like the rest of the Pakistani population, fear of side effect was the common reason for vaccine hesitancy. Our 42.6% cancer patients were on chemotherapy and were under going through chemotherapy related adverse effects so their concerns about vaccine related side effects were understandable. In a study from USA, 30% of cancer patients and their caregivers refused to get vaccinated due to fear of side effects [13]. In a French study, 30% patient who refused the vaccine gave fear of side effects as the main reason for refusal [14]. In our study, 17.4% cancer patients were hesitant due to fear of side effects. Of 22.7% patients who had refused the vaccine, 6.6% patients had concern about vaccine interference with cancer treatment. This has also been reported as small in a study from USA [13]. However, that concern of vaccine interference with cancer treatment was significantly reduced with counseling of our patients. The strength of our study is that better communication between oncologists and patients resulted in a high acceptance rate for COVID-19 vaccination. Patients who had agreed to get vaccinated also encouraged other patients to do the same. The limitation of our study is that we did not report vaccine related adverse effects. However, there was no vaccine related mortality noted.

## Conclusion

COVID-19 vaccine acceptance is higher among cancer patients at our institute compared to reported data. Oncologists should play a key role in encouraging their patients to get this vaccine in order to reduce COVID-19 related mortality.

## Conflicts of Interest

None.

## Funding

None.

## REFERENCES

1. World health Organization (2020) Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV).
2. COVID-19 health advisory platform by ministry of national health services regulations and coordination (2022).
3. National Command Operation Center. National command operation center (2022).
4. Polack FP, Thomas SJ, Kitchin N, Absalon J, Gurtman A et al. (2020) Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. *N Engl J Med* 383: 2603-2615. [Crossref]
5. Covid-19 Vaccines in Pakistan and Cancer Patients (2022).
6. Wang Q, Berger NA, Xu R (2021) Analyses of Risk, Racial Disparity, and Outcomes Among US Patients With Cancer and COVID-19 Infection. *JAMA Oncol* 7: 220-227. [Crossref]
7. COVID-19 Vaccines & Patients with Cancer [Internet]. ASCO. 2021 [cited 2022 Mar 24]. Available from: <https://www.asco.org/covid-resources/vaccines-patients-cancer>
8. Ribas A, Sengupta R, Locke T, Zaidi SK, Campbell KM et al. (2021) Priority COVID-19 Vaccination for Patients with Cancer while Vaccine Supply Is Limited. *Cancer Discov* 11: 233-236. [Crossref]
9. EMSO. EMSO STATEMENTS ON VACCINATION AGAINST COVID-19 IN PEOPLE WITH CANCER.
10. Khan YH, Mallhi TH, Alotaibi NH, Alzarea AI, Alanazi AS et al. (2020) Threat of COVID-19 Vaccine Hesitancy in Pakistan: The Need for Measures to Neutralize Misleading Narratives. *Am J Trop Med Hyg* 103: 603-604. [Crossref]

11. Asad S, Qureshi J, Raheem M, Shah T, Zafar B (2021) The Analytical Angle: Vaccine hesitancy in Pakistan is growing. Here's how it can be tackled. *Dawn*.
12. Malik A, Malik J, Ishaq U (2021) Acceptance of COVID-19 vaccine in Pakistan among health care workers. *PLoS One* 16: e0257237. [[Crossref](#)]
13. Kelkar AH, Blake JA, Cherabuddi K, Cornett H, McKee BL et al. (2021) Vaccine Enthusiasm and Hesitancy in Cancer Patients and the Impact of a Webinar. *Healthcare (Basel)* 9: 351. [[Crossref](#)]
14. Barrière J, Gal J, Hoch B, Cassuto O, Leysalle A et al. (2021) Acceptance of SARS-CoV-2 vaccination among French patients with cancer: a cross-sectional survey. *Ann Oncol* 32: 673-674. [[Crossref](#)]
15. Clinical Management Guidelines for COVID-19 Infections` [Internet]. 2020 [cited 2022 Mar 24]. Available from: [https://covid.gov.pk/new\\_guidelines/05June2020\\_20200106\\_Clinical\\_Management\\_Guidelines\\_for\\_COVID-19\\_infection\\_v2.pdf](https://covid.gov.pk/new_guidelines/05June2020_20200106_Clinical_Management_Guidelines_for_COVID-19_infection_v2.pdf)
16. Yusuf A (2020) Cancer care in the time of COVID-19-a perspective from Pakistan. *Ecancermedicalscience* 14: 1026. [[Crossref](#)]
17. World Health Organization (2021) Pakistan Source: Globocan 2020. *IARC*.
18. Qamar MA, Irfan O, Dhillon RA, Bhatti A, Sajid MI et al. (2021) Acceptance of COVID-19 Vaccine in Pakistan: A Nationwide Cross-Sectional Study. *Cureus* 13: e16603. [[Crossref](#)]
19. Hong J, Xu X-W, Yang J, Zheng J, Dai S-M et al. (2022) Knowledge about, attitude and acceptance towards, and predictors of intention to receive the COVID-19 vaccine among cancer patients in Eastern China: A cross-sectional survey. *J Integr Med* 20: 34-44. [[Crossref](#)]